Data for
talk at International
Ornithological Congress
1962 (Ithaca N.Y.)
and
Publication 1962
LACM Contrib Sci. #58

circle:
file circulate
for your information
reply post return
initial hold

memorandum

date July 30

from

to

p. 6 TP1 line 8 were instead of are ?

p. 8a-b. I gather that the change in relative abundance of Sturnella at Pica is an indicator of ecological change at the pit sites. Yet, in Table II (8b) it seems to be used as a criterion of relative age of the pits. I gather that predominance of Sturnella over Pica is in better agreement with the more recent conditions and to this extent is an age indicator, but some clarifying statement should be inserted, possibly on p. 8a on line 19 where I have marked ^ insert ?

Not written by HH

action taken: date:

suggested opening paragraph

Editorial comment from
Dr. Friedmann (ink)
D. Downs (pencil)

The richness, both in species & in individuals, of the avifauna of the Rancho La Brea ~~asphalt~~ deposits, permits a more detailed micro-chronology than is usually feasible in paleontological studies. The fact that the total time scale involved in the entire picture is short, ~~in~~ on an evolutionary scale, enables one, in effect, to evaluate changes in the local fauna and ~~it~~ in the numerical status of its members, in a way comparable to studies of existing faunas in areas under protracted observation, even though the number of years in the latter is much smaller. It affords a rare opportunity to treat a fossil fauna in much the same way as a recent one.

L Downs

~~P. 1 1st Par. Rough comparisons made between pit 10, 3 & 4~~
~~were they?~~

P. 4 2 Par. Also increased number of individual?
why.

P. 6 3 Par. Are these "Criteria" specifically stated - if so
what page in Howard & Miller, 1939?
2 still do not understand the reference of "Age"
in Table II

P. 8. 1st Par. Is there really evidence for "grassland" assoc.
in ~~recent~~ most recent time

P. 10 1st Par. where is this "mean" calculated & compared?

(Over)

The Pit 16 dominance in total individuals and species seems more than chance. Can this be developed? Small pit too

How about comment on possible (?) relation of water birds & age - Note Pit 16 & Acad show ~~close~~ presence of 9° extinction

common name?

p. 3. ¶ 3 line 5 was the diameter of Pit 16 never measured?
why "seemingly of small diameter"?

p. 4. Third sentence
Are not the passerine species from the 1929 excavations included in the present table?

p. 6 near end of ¶ 2 Pica nuttalli
Is Pica nuttalli distinguishable osteologically from P. pica?

p. 8. ¶ 2
should not the 4 species found in all 12 pits be included with the 13 found in the 8 older pits and together be considered the nucleus of the typical Rancho La Brea Pleistocene avifauna?

p. 10 ¶ 2
~~line 1 "during" instead of "between"~~
last line after "satisfactory" insert
"or useful for our present purposes"

p. 11 Would it be advisable to add a short "wind-up" concluding ¶ such as —

"The data here presented reveal the not surprising, but otherwise undocumented vicissitudes, changes in relative abundance, the appearance & the disappearance of various species in the portion of the late Pleistocene here concerned. This survey ~~shows~~ that the changes were not inconsiderable, and gives a picture of their rapidity and character during a period of completely "natural" events, unaffected by the upsetting presence of civilization.

Species to be recorded from Rancho La Brea

✓ Butorides virescens, tibia no. F. 1824 Pit 61

✓ Podilymbus podiceps, femur no. F5741 Pit 6.1

✓ Limosa fedoa? tarsus G4907, Pit 28 tibiae F8504 and F451 Pit 3 (check these)

✓ Squatarola squatarola, tarsus, K1135 Pit 4? (or K1125, can't read number)

✓ Totanus melanoleucus, tarsi, K1115 and K1116, Pit 34 also several specimens of tarsi, humeri and a tibiae in So. Cal. Acad. coll.

— Pileated Woodpecker? Tibia from Pit 16, no. number

✓ Recurvirostra americanus, tarsus and humerus from A5 = Acad access #

✓ Cygnus columbianus, carpus, from A5 = Acad access #

✓ Cryptoglaux acadica, tarsus no. K1180 (on exhibit) Pit 36

Nycticorax nycticorax, tarsus, no. ~~E1839~~ Recorded Condor 31:252, 1929

~ Grus americana, several

✓ Fulica americana, tibia no. F142 Pit 4

☆ Buteo lineatus (look for)

Falco, sp. small for peregrinus but has characters of this species; too large for sparverius or columbarius I think. 2 tibiae ~~and a humerus~~. Try F. fusco-caerulescens.

Humerus reported as Colymbus sp. with remarks that it might be Podilymbus in Miller's Carnegie report -- a check with Podilymbus and Colymbus shows it definitely Colymbus, but wouldn't venture the species without careful study of auritus. E3041 (or E3841?)

✓ Buteo lagopus, 2 tarsi in A5, = Acad Pit and 5 tibiae? Occurs also in other pits? have not found

✓ Buteo regalis, 6 tarsi, 2 tibiae, 2 humeri from A5. = Acad. Occurs also in other pits

Branta nigricans, tarsi in A5 = Acad (to be checked further
Also some other small tarsi, too small for B. c. minima?, not right for Dendrocygna (not straight-sided, and also too slender)

✓ Nettion carolinense, 5 humeri, definitely of this species. Never been definitely recorded before. In A5

✓ Anas platyrhymchos (as above) 7 humeri.

Plenty of Phaeopus and Numenius in our collections.

Mycteria ? tibia Tarro. G6441

Individual

Pit Course

Study

Order of abundance

	total of known pairs	total over pairs	3	4	13	16	36	60	61	77	acad	Pitk			
Aquila	886	(904)	85	238 ✓	58 ✓	382 ✓	14	44 ✓	28	17	20		4		48
Parabuteo	567	(568)	42	173	24	238	11	13	26	10	30 ✓		1		10
Polyborus	268	(273)	28	40	15	144	6	8	13	2	12		4		3
Gymnogyps	212	(214)	88 ✓	33	11	4	3	7	42 ✓	18 ✓	6		–		1
Geranoaetus	192	(198)	38	61	18	25	1	9	18	14	8		–		3
Haliaeetus	170	(173)	11	28	41	66	–	6	4	3	11		–		3
Neophron	136	(138)	18	40	10	36	2	5	12	3	10		–		4
Buteo bor. subs	112	(115)	6	21	6	54	2	8	3	1	6		1		7
Coragyps	110	(112)	–	7	–	84	13	–	1	–	5		–		1
Teratornis	97	(99)	22	20	5	13	1	7	22	4	3		1		6
Spizaetus	97	(98)													
Pica nuttalli	135		12	11	4	91	15 ✓	1	–	–	–		–		1
Total includ. passerines			559	888	346	1628	161	143	294	97	286		334		782
% passerines ~~total~~			5.0%	3.5%	2.6	11.5	18.6	1.4	1.3	1.0	3.8		11.0		20.6
% Anseriformes	2.3%		2.1	3.0	4.6	3.5	6.9	1.4	.65	2.0	21.3		.29		.71
% " (omitting passerines)			2.2	3.1	6.7	3.9	8.4	1.4	.69	2.0	22.2		.33		.91
% Meleagridae	13.1%		7.8	20.2	9.7	16.5	6.9	9.2	8.5	10.4	10.4		1.33		1.2
% Charadriiformes	1.3		.75	.23	–	3.8	1.8	–	1.3	–	7.0		9.0		1.0
% Ciconiiformes	1.4%		11.6	10.0	1.9	.83	1.2	2.8	4.7	9.0	4.2		–		.12
% Falconiformes	60.1%		69.5	67 67.8	73.6	51.1	39.7	77.6	72.6	80.4	38.5	38.8%	4	17.5 68%	46.0
% Avian eagles			17.1	30.0	28.6	27.5	8.7	35.0	10.8	20.6	10.8		0	2.5	0.6.1
% Strigiformes	9.6%		12.5	3.8	2.8	7.2	13.1	6.3	8.1	1.0	10	10.2%	45.6	6.7 25.8	35.4
% fawkes to total			10.0%	4.5	.89	3.0	16.1	4.9	13.9	9.2	5.2		34.1	9.3 57.2	28.3

No indiv. pit Toat has the species in the order of abundance noted for the area as a whole!

	3	4	13	16	36	60	61 67	77	Acad	P.J.	28	37	10
Total raptors	459	628	187	957	86	120	238	79	138		130	158	622
Total Condors + Teratornis	117	56	17	18	4	14	70	24	10		1	0	7
Total Eagles (omit Neophron.)	122	342	108	545	19	65	54	26	47	35	4	0	61
Total Hawks + falcons	64	51	11	82	29	9	45	8	22		19	102	240
Total owls	70	34	7	105	22	9	24	1	28		102	50	274
Other raptors	86	145	44	207	12	23	45	20	31		4	6	20
% Condors, Terrs to total raptors	25.4%	8.9%	9.0	1.8	4.6	11.6	29.4	30.3	7.2		0.76	0	1.1
% Eagles to total raptors	26.5	54.4	52.4	56.9	22.0	54.1	18.0	32.9	34.0	26%	3.0	0	9.8
% Accips falcons + owls	29.1	13.5	9.7	19.5	59.3	15.0	28.9	11.3	36.2		93.0	96.2	85.8
Total passerines	28	31	9	190	30	2	5	1	11	53	25	12	123
Sturnella neglecta	2	3	1	10	1	–	–	1	2	0?	14	5	76
% Sturnella to total pass.	7.1	9.6	11.1	5.2	3.3	–	–	–	18.1		56%	41.6	61.7
Extinct raptors	141	244	59	322	16	44	95	31	51		4	1	26
% " to total "	30%	38%	31%	33%	18%	34%	39%	39%	36%		3.0%	.6%	4.1%
% owl to total raptors	15%	5%	3.7	10%	25%	7.5	19%	1.2	12%	20%	78%	31	44
Catharistes	2	4	1	2	3	1	2	1	1		1	5	10
Coragyps	38	61	18	25	1	9	18	14	8		0	0	3
% Cath. to combined 2	5%	6.1%	5.2	7.4	75%	10%	10%	6.6	11%		100%	100%	84%
% vultures to total light, Cathartidae, Terrs + Polyborines + Neophron	40	20.4	19.9	5.2	12.5	21.8	42%	50%	17.2	14%	11.5	3.1	3.2
Raptors to non-raptors	4:1	3:1	3:1	3:2	2:1	9:1	4:1	4:1	3:1	2:1	4:1	10:1	4:1

overall census 4:1

Large vs small raptors

	3	4	13	16	60	67	77	86	28	10			
Eagles + Condors	239	398	125	563	79	124	50	57	137		36	28	37
Hawks, owls, falcons	133	85	18	187	18	69	8	50					
Small vultures + Caracara (includes Cerayps, Neophron)	86	145	44	207	23	45	20	31					
	458	628	187	957	120	238	78	138					
Ratio large/total	52.3%	63.4	68.7%	58.6	65.7	56.3	64.2	41.4					
" small/total	29.2	13.5	9.8	19.5	15.0	28.8	10.2	36.2					
" small/large	55.6	21.4	14.4	33.3	22.8	55.6	16.0	96.2					
7 spp. (excluded Neophron) Eagles + Condors + Terry													
Eagles + Condors + Terry	257	438	135	599	84	136	53	67	5	72	25	5	0
Hawks, owls, falcons	134	85	18	187	18	69	9	50	273	533	41	121	150
Other raptors	68	105	34	171	18	33	17	21	10	16	10	4	6
Total raptors	459	628	187	957	120	238	79	138	288	621	76	130	156
Ratio Eagles et Terry/total	56.0	69.7	72.2	62.5	69.9	57.2	67.1	48.5	1.7	11.6	32.9	3.8	0
" Hawks, owls, falcons/total	29.2	13.5	9.6	19.5	15.0	29.0	11.4	36.2	94.8	81.8	53.9	93%	96.1

Other raptors

Catharistes	2	4	1	2	1	2	1	1	6	10	3		
Cerayps	38	61	18	25	9	18	14	8	—	3	1		
Polyborus	28	40	15	144	8	13	2	12	4	3	6		
	68	105	34	171	18	33	17	21	10	16	10		

Abundance of extinct spp. in La Brea pits

Pit nos. →	3	4	13	16	60	61/67	77	"Acad"	La	28	Total Pleito	36	Pit 10	37
Nycteria wetmorei	–	–	–	–	–	–	–	8	1		1			
Ccoria maetha	2	8	2	10	3	4	3	3	2		37		13	
Anabemicula	–	2	3	3	–	–	–	15	1		24		–	
Coragyps occid.	38	61	18	25	9	18	14	8	4		195		3	
Gymnogyps	88	33	11	7	7	42	18	6	3		212		1	
Breagyps	7	3	1	1	–	6	2	1	1		22		–	
Teratornis	22	20	5	13	7	22	4	3	1		97		6	
Wetmoregyps	–	4	–	–	–	–	–	2	–		6		–	
Umbrotnges	9	17	4	27	4	6	2	3	4		76		2	
Morphnus w.	6	5	–	3	2	6	–	1	1		24		2	
Spizaetus spin.	8	30	3	35	4	7	3	7	5		102		4	
Neogypserraus	3	20	2	32	5	3	1	3	3		72		2	
Neophrontops	18	40	10	36	5	12	3	10	5		139		4	
Polyborus pre.	28	40	15	144	8	13	2	12	8		270		3	
Parapavo calif.	42	173	24	238	13	26	10	30	18		574		10	
Ectopistes	–	–	–	1	–	1	–	–	–		2		–	
Strix brea	2	2	–	5	–	2	–	1	1		13		–	
Bubo sp.	–	2	1	4	1	–	1	–	1		10		–	
	273	460	99	577	68	168	62	105	59		1877		38	
– Gymnogyps asliv.	185	427	88	573	61	126	44	100	55		1665		37	
Total non pass.	531	857	237	1440	141	290	96	275	178		4045		658	
Extinct blurry, gymno, extinct														
Gymno. (lurin) %	34.8	49.8	37.1	39.7	43.2	43.4	45.8	36.4	30.8		41.1		5.4 %	

Carrion/Coragyps	1/38	4/61	1/18	2/25	3/1	1/9	2/18	1/14	1/8	1/10	10/3	5/0	1/0
	3	4	13	16	34	60	67	77	Ac ad	98	10	37	A
Eagles													
Wetmoregyps	–	4	–	–	–	–	–	+	2	–	–	–	3
U. fragilis	9	17	4	27	5	4	6	2	3	–	2	–	3
M. woodwardi	6	5	–	3	–	2	6	–	1	–	2	–	–
Spizaetus spin.	8	30	3	35	–	4	7	3	7	–	4	–	4
Neogyps	3	20	2	32	–	5	3	1	3	–	2	–	2
Neophrontops	18	40	10	36	2	5	12	3	10	–	4	–	2
Haliaeetus	11	28	41	66	–	6	4	3	11	–	3	–	2
Aquila	85	238	58	382	14	44	28	17	20	4	48	–	21
	140	382	118	581	21	70	66	29	57	4	65	0	37
Condors													
Teratornis	22	20	5	13	1	7	22	4	3	1?	6	–	1
Breagyps	7	3	1	1	–	–	6	2	1	–	–	–	–
Gymnogyps	88	33	11	4	3	7	42	18	6	–	1	–	1
	117	56	17	18	4	14	70	24	10	1?	7	0	2
Hawks													
Accipiter (3 spp.)	3	17	–	21	–	2	2	–	3	–	1	–	9
Buteo (4 spp.)	35	13	2	20	4	3	35	6	9	9	138	78	10
Circus	18	8	–	4	12	1	4	–	3	6	84	21	1
Elanus	1				1					–	1	–	–
Buteo extinct?	–	2	1	4	–	1	–	1	–	–	–	–	2
	57	40	3	49	17	7	41	7	15	15	224	99	22
Falcons													
Polyborus	28	40	15	144	6	8	13	2	12	3	3	1	14
Falco (4)	7	11	8	33	2	2	4	1	7	4	35	3	30
Owls													
Tyto	28	3	–	2	9	–	16	–	8	22	100	14	3
Otus	1	–	–	5	2	–	–	–	1	2?	–	1	4
Bubo	6	21	6	59	2	8	3	1	6	1	7	–	8
Glaucid	1?	–	–	1	1	–	–	–	–	–	–		–
Speotyto	9	3	–	15	1	–	–	–	3	56	104	31	6
Asio	23	5	1	18	6	1	3	–	9	21	63	4	4
Strix brea	2	2	–	5	1	–	2	–	1	–	–	–	3
	70	34	7	105	22	9	24	1	28	132	274	50	28

	3	4	13	16	36	60	61 67	>>	9 Cano	25 37	10
Ex Fiust											
Cicon.	2	8	2	10	1	3	4	2	4	–	–
Anseri.	–	2	3	3	–	–	–	–	15	–	–
Falconi.	28	40	15	144	6	8	13	2	12	4	3
Cathartidae	67	84	24	39	2	16	46	20	12	1	10
gymnogyps	88	33	11	4	3	7	42	18	6		1
Eagles	44	116	19	133	7	20	37	9	26	–	14
galli.	42	173	24	238	11	13	26	10	30	1	10
Columbig				1	1		1				
Bantai sp		2	1	4		1		1			
Strigi.	2	2	–	5	1	–	2	–	1	–	–
– gymnogyps	185	427	88	573	29	68	126	44	100	6	37
+ gymnogyps	88	33	11	4	3	7	42	18	6	0	1
	273	460	99	577	32	68	168	62	106	6	38
	✓	✓	✓	✓		✓	✓	✓	✓		✓
Total indiv (non pas)	531	857	237	1440	131	141	290	96	275	297	657
Ratio Extinct to total non pass.											
gymnogyps ext	51.3	53.6	41.6	40.0	24.4	48.3	58.0	64.5	38.6	2.2	5.7
gymnogyps livg	34.8	49.1	37.1	39.8	22.2	43.3	43.8	45.9	36.4	2.2	5.6
					R					R	R
Ratio cathartes or Coragyps.	1/19	1/13	1/18	1/12	3/1	1/9	1/9	1/14	1/8	6/0	37/1
Extinct spp. recorded (not certain gymnogyps	12	15	12	14	8	11	13	11	15	3 (2+) 1 (3?)	9
Total spp. all ducks as 1 " geese as 1	43	41	28	57	33	26	40	23	53	25 22/14	41

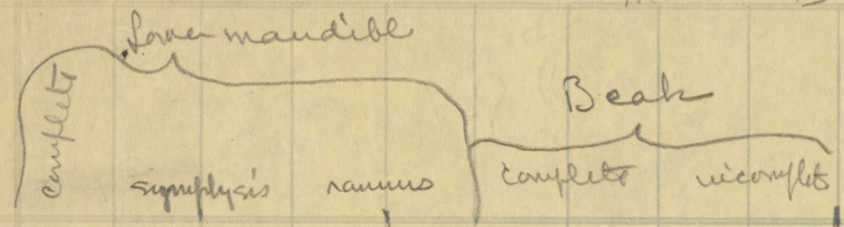
P+A - Tarsi

	complete	prox.	dist.		complete	prox	dist
	L ~~R~~				L R		
Ciconia matth.		1 ad		Polyboroides	6 ad 2 ad	1 ad	3 ad 3 ad
Goose			L1	Falco pe.	R1		
				F. sparverius	L1 R1	2 3	5 2
Cathartes aura	R1			F. columb.	R1		
				Polihierax			
Gymnogyps	L1 R1 } not mates						
Teratornis	~~R1~~ L2	R1 ad		Pandion	L 4 male 5 ♀ 6 ♀♀ R 1 male 3 ad 3 ♀♀	1♂ 0 sex? 2 sex? 3 ♀♀	7 4 2 4
Circus	R1		R1	Columbia			
Accipiter Haueter	L3	L2	L3	Zanclodus	L1 R1		R1
Buteo borealis	R1	R1		Geococcyx	L1 R3 } 1 set pairs, but not other		4
B. swainsoni ?	L1 R1 } not mates			Tyto alba	R2		R1
B. Degallus	R1			Otus asio	L1 R2	1	L1 R3
Vultur gryphus		R1 L1	R3 L2	Spectyto	L3 R5		1
Pterocnemia	L1 R1 } not mates	L1		Asio			
Spizaetus	R2 L1			Bubo virg.	L4 ad, 1 ♀ R1		L1 R1
Aquila	R1 L1	R3	L2 R4	Glaucidium			
Haliaetus				Strix	L2 R4		
Neogyps	L2 R1 } not mates		R1				
Neophron	L1 R2		L1				

Pt A Eagles

	Tarsus left	Tarsus right	Tibiotarsus L	Tibiotarsus R	Femur L	Femur R	Humerus L	Humerus R	Carpus
	+1 prox	+3 prox	3 prox	+3 prox	+5 dist	+3 prox	+8 prox	+6 dist	
Aquila	6	19	14	14	11	13	10	16	
Wetmoregyps	2	3		3			1		
Spiz.	—	2	4	1 +1 prox	1	3	1	2	
Haliaeetus	2			1	1				1 1
Buteogal. pag.	1	1	3 +1 dist	1 +1 dist	1	4		1	
Neogyps	2	2	1	2	1	1		1	
Neophron	1	1				1	1	1	

Beaks - C & A
Mandibles



Colonia colonus		1			Blackbird		2
					Song thrush		3
					Sapsucker	1 UK	
Wetmoregyps			1		Tyrannus	1	
Aquila			11		Cephalopoma (Jay)	6	
Neogyps			1		Pica	2	7
Haliaeetus leucocephalus			4		Nucifraga	Low mand 1	caput 2 mand
Polyborus					Corvus		
H. spaniensis					Cyanocitta	2	
					Turdus migratorius	1	3
Sophrastes			20		Turdus?		2
Parapavo			5		Sialia	5	3
Columba					Junius	2	2
Cheracyx?					Stumella	9	9
Tyto	GM		4		Agelaius		3
Bubo			2		Euphagus		
Pisinus owl					Oriolus	4	
Otus					Vireosylva	2	
Speotyto					Pipilo		
Asio					Zonotrichia?		
Glaucidium					other finches		

PtrA
large

Teratornis	1
Condor	1
Aquila	21
Spiz.	4
Umbit.	3
Hale	2
Wet.	3
Neog.	2
	37

PtrA
Medium

Cathartes	1
Polyborus	14
Neophr.	2
	17

PtrA
small

Accipiter	9
Circus	3
Buteo Boo	6
" swains	1
" lin	2
" reg	2
" lag	1
Falco sp.	23
" col.	5
" peregrinus	2
Tyto	3
Bubo	8
Other and mix	4

PtrA
Extinct

✓ Strix	1
✓ Teratornis	1
✓ Caracara	14
✓ Spiz.	4
✓ Ursus	3
✓ Wet	3
✓ Parapavo	21
✓ Neophr	2
Neogyps	2
	54
Mix	4
	58

37
17
54
108

28.4, large
130)37.0
260
1100
1040
600

68.5% small
130)76.0
65 0
1100
1040
600

7%

Bliss 29 PtrA 28.4
24% = 23.3%

Bliss 29 small 21 - 24%
Bliss 29 med 9 - 66%
small 59 -
89

58.4
66.6%

66.6
90)60.0
540
600

23.3
90)21.0
180
300
270
300

89)
130
89)59.0
534
560
534
26

Pit A Birds = Humeri

Humeri of Ardea sparverius 21
14 left complete + 7 inc. (+ 3 frags.)
12 right complete + 3 inc

Humeri Falco columbarius – 3
3 left complete

Humeri Geococcyx – 2
2 right complete
2 left complete

Quail – 30
16 left complete 7 inc. – (3 are yg.) = 23 + 2
16 rt 4 12 inc – (5 are yg) = 28 + 2

Polyborus plancus – 6
2 right complete – 1 inc.
3 left complete – 3 inc (+ 1 frag) (1 is yg)

Spotted circularis 2
2 right complete
1 left incomplete

Otus asio 2
2 rt (1 frag prox, the other comp Bird for distal end)
1 left complete

Asio (wilsonianus?) 1
1 right prox

Ictinia plumbea 1
1 right prox
1 left dist

Kingfisher? Chloroceryle? – 2
2 right complete

Bubo virginianus – 4
2 right complete (2 inc – 1 of which is yg)
1 left " (1 inc.) + 1 dist. epiphysis

Meleagris gallopavo
1 prox. half left

Aquila chrysaetos 17
2 right complete, 15 inc or prox (7 dist with right ft)
2 left " , 6 prox, 9 dist.

Nesphrontops americanus 1
1 right complete
1 left prox.

Buteo borealis? 4
1 left 2 right small
2 left lower legs?

Neogyps errans 1
1 right prox
1 left prox

Spizaetus ornatus - 2
1 right complete, 1 frag prox sh
2 left incomplete (actually 1 prox. 1 sh. 1 dist - equiv to 2)

Terathopius 1
1 dist end frag

Shorebirds (sps.?) 3
(all different)
1 right prox
1 left " , 1 complete

Gymnogyps? 1
1 prox; 1 dist

Zenaidura macroura 2
1 left complete, 1 inc.
1 right complete

Parabuteo unicinctus 4
right (2 prox, 3 dist)
left (1 prox 4 dist)

Sparrow-like or Blackbird 2
1 left prox
1 right " (2 dist)

Accipiter cooperii 3
left (3 prox. 1 dist)

Circus hudsonius 3
1 left complete (+ 1 prox, 2 dist ends)
right (1 prox, 1 dist)

Carpometacarpus

Accipiter 4
3 prox
1 rt comp
9 left " , 1 prox

Geococcyx 4
4 left comp, 1 rt

Rejon 1
1 left comp

Poor-will or Nighthawk 3
3 left comp
2 rt prox

Quail 13
13 left comp
10 rt " , 1 prox

Falco sparverius 14
8 rt comp, 3 prox 1
12 left comp 2 prox

Falco columbarius 5
3 rt comp (9)
1 left " , 1 prox (8)

Aquila chrysaetos 9
6 left comp, 1 prox
4 rt, 5 prox, 1 dist

Haliaeetus leucocephalus 2
1 rt, left comp
1 rt prox

Buteo virginianus 7
4 left comp, 1 dist
1 rt " , 2 rt dist
2 left comp small
Buteo Rea 2
2 rt prox, 1 comp
2 left comp, ? may be Buteo
1 prox albo

3

Falco peregrinus 2
2 left comp.

Buteo borealis 2
2 prox, 1 dist
1 left prox

Circus hudsonius 2
1 left comp.

Asio 2 rt. comp.

Corvus 2
2 rt, 2 left

Corvus brachyrhynchos 2
2 left comp

Buteo borealis 2
2 left comp. (1 accessory)
1 left Nat negative?

Corvus 2
2 left conflicts

Ac. cooperii 1
1 rt prox

Asio 2
2 rt comp,

Spizaetus ornatus
2 left, 3 right

Hypomorphnus fragilis 3
3 left, 3 right comp

Meleagris gallopavo 1
1 right comp?

Falco columbarius 12 9, 3♂
1 left comp, 2 prox, 1 dist
3 rt 3 left comp.

Caracid

Parapavo
2 left, 1 right

Meleagris ?
1 comp?

Liconia mastha
1 left complete

Hypomorphnus typhlis
2 left complete
1 rt prox

Syrnaetus pinnulli 4
1 rt, 1 left large
2 rt, 3 left smaller (1 gradacida complete)

Neogyps errans
2 rt, 1 left

Aquila clupaetus 9
4 left complete, 1 prox
5 right " , 4 prox

Neophron ? americanus
1 right complete
1 left "

Bubo virginianus 8
7 rt comp., 1 prox
1 left " , 1 prox

Asio
2 left comp

Spizaetus
1 rt comp, 2 prox
1 left "

Poor-wild ? 10
9 complete, 1 prox rt. (2 are yg)
4 comp. left (1 is yg)

Cyanocitta
1,

Falco femoralis 17
15 left comp, 1 prox.
15 rt " 2 prox

Falco columbarius 2
2 rt comp
2 left comp

Falco mex. ? peregr ? 1
1 rt comp'

Polyborus plancus 10
10 rt complete (1 is yg)
7 left " , 1 prox (1 is yg)

Quail 16
12 left comp., 4 prox (1 is very yg)
9 rt " , 6 prox (3 are yg)

Accipiter cooperi
8 left comp., 1 prox.
3 rt " , 2 prox

Bubo sp. (prob'ly 3 or 4 sps) 7 6
1 rt, 1 left B. lagopus?
1 left B. regalis?
(1 rt, 3 left B. bor., 1 swainsoni?
+1 prox left
1 small left comp (yg?)

Strix linearis ?
2 rt comp.
2 left prox

Colaptes cafer?
5 rt complete
4 left "

Tarsometatarsi P-t "A"

Falco sparverius 23
~~20~~ right complete, 2 prox., 3 dist.
~~15~~ left complete, 2 inc, 2 prox., 3 dist

Polyborus plancus 11
9 left complete (1 is yg), 1 prox, 2 dist
9 right " (2 are yg), 2 prox, 1 dist

Falco columbarius
1 right complete

Falco ~~mexicanus~~ peregrinus?
1 right complete

Cathartes aura
1 right complete

Accipiter californicus 8
2 right complete
3 ~~left~~ complete, 2 prox, 5 dist

Goose
1 left dist

Quail 27
13 right complete, 3 inc, 7 dist. 2 prox (2 are yg)
20 left complete (7 are yg), 7 dist, 2 prox

Pisobia minutilla 5
5 right comp (1 is yg)
3 left comp 1 prox, 1 dist

Asio (wilsonianus?)
3 left complete
3 right complete.

Bubo ~~virginianus~~ 4
2 right complete, 2 dist
1 left complete, 1 inc, 1 dist, 1 prox

Tyto pratincola 3
2 right complete, 1 dist

Bubo virginianus 6
5 left complete, 1 dist
1 right " , 1 inc

Strix brea?
4 right complete
2 left complete.

Wetmoregyps daggetti 3
2 right prox, 2 dist (1 is one, th prox/dist)
2 left inc.

Aquila chrysaetos 21
1 right complete, 5 prox., 3 dist
5 left complete, 1 inc, 2 dist

Neophrontops americanus 2
2 right complete
1 left " , 1 prox, 1 dist

~~Teratornis~~

Haast sp. 2 B. lineatus?
2 right comp
1 left inc

Accipiter cooperii 3
1 right complete, 1 inc, 2 dist
2 left complete

Circus hudsonius
2 left complete
1 right complete,

Pandion californicus 27
4 right spurs
6 left "
8 left complete no spur, 5 prox 6 dist.
6 right " " " 1 prox 5 dist
7 left ung. yg.
6 right " "

Zenaetina macroura 2
1 right complete, 1 dist
1 left complete

Ciconia 1
1 prox

Teratornis
1 right prox

Haliaeetus leucocephalus 1
1 left complete

Spizaetus juncalis 2
2 right complete

Neogyps errans 2
1 right complete, 1 inc.
2 left complete

Gymnogyps 2
1 right complete } not
1 left " } meats

Hyponagalinus fragilis 2
1 right complete
1 left complete, & 1 prox.)

Buteo borealis? 4
4 right complete, 1 prox
3 left complete, 3 prox 3 dist

Buteo swainsoni 1
1 left } complete
1 right }

~~Coragyps occ.~~
Poor-will 1
1 r, 1 left

Buteo regalis?
1 right complete

Birds from Pit "A"

Identified by Howard - August 1941

	Tarsometatarsus right	Tarso. left	Humerus right	Humerus left	carpometacarpus right	Carpo. left	Coracoid right	Coracoid left	
Ciconia (Stork)		1						1	1
Goose, sp.		1							1
Cathartes (vul)	1								1
Condor	1	1	1						1
Teratornis	1		1						1
HAWKS									
Accipiter	3	3		3	1	[illegible]	5	9	9
Circus	1	2	3	1	1	1			3
Buteo borealis	5	6	2	1		1	1	5	6
B. swainsoni	1	1							1
B. lineatus? Sp.	2	1			2	[illegible]	2	2	2
B. regalis	1		2?			2		1	2
B. lagopus							1	1	1
Polyborus	11	11	3	6	14	10	10	8	14
Falco sparverius	23	19	18	21	11	14	17	16	23
F. columbarius	1			3	3F	2M	2	2	5
F. peregrinus?	1					2	1		2
F. mexicanus?									
EAGLES									
Aquila	21	7	17	11	9	7	9	5	21
Spizaetus	2		2	2	3	2	1 L 2 S	1 L 3 S	4
Hypomorphnus	1	2			3	3	1	2	3
Haliaeetus		1			2	1			2

smaller maybe?

Total Birds 29 = (= Pit A)
105 - Rodent
29 Bird

Total 73 calculated by size

barbed smaller total 4

103

Birds from Pt "A"

	Tarsus right	Tarsus left	Humerus right	Humerus left	carpus right	carpus left	coracoid right	coracoid left	carpo meta
Wetmoregyps	3	2		1	1?		2		
Neogyps	2	2	1	1			2	1	
TURKEY	4M 6F	6 8F		3M	3 M				
Parapavo	6yg	7yg	3	4	12F	10F	1	2	
Quail	23	27	30	25	11	13	15	16	
Zenaidura(dove)	2	1	1	2					
Pigeon						1			
Geococcyx	2	8	2	2	1	4			
OWLS									
Tyto alba	3		1	1					
Bubo virg.	2	6	4	3	3	6	8	2	
Otus asio	4	3	2	1		3			
Asio, sp.	3	3	1		2			2	
Speotyto	5	4	2	1	2	2	6	1	
Strix brea?	4	2			2				
Poor-will	1	1	2	1	2	3	10 7	3 4	R 3 L 2
Kingbird, Tyrannus		2	3						
Kingfisher			2						
3 sps.									
Shorebirds			1	2		2			
Neophrontops	2	2	1	1		2	1	1	
10 woodpecker sps.									
Colaptes cafer?			4 dist	3 dist			5	4	
Corvus corax	3	1	1	1			1		3 L 1 R
Sturnella neg.			10	8					
Corvus caurinus	6	5 sp?	4 sp?	3	3		4	4	4 L 2 R
Sm. Bracky			1?, 4						Bracky?

103

3 2 2 1 4 2 1 1 14 4 3 55

M = Male
F = Female

25.1
219 ⟌ 55.0
438
1120
1095
25

25
214 ⟌ 55.0
428
1220
1070
150

minus woodpeckers

27
202 ⟌ 55.0
404
1460
14

at least 2 sps, minus woodpeckers (not asyndesmus)

5.2.62 (3)

Now let us compare the kinds of birds

	Total count	Individual pits
Dominant species	886 Aquila chrysaetos 20%	A. chrysaetos in four (23-30%) Gymnogyps amplus in 3 (14-18%) Parapavo californicusl (10.4%) Pica nuttalli (1) (9.1%)
Other abundant	212 Gymnogyps amplus 4.8% 567 Parapavo calif. 13% 268 Polyborus 5.1%	G. amplus (0.24 - 18.5) Parapavo (7.5 - 19.5%) Polyborus (2.0 - 6.2%)
10% or more of total count	Aquila 20% (886) Parapavo 13% (567) (total count 4344)	Aquila (15.1 - 30.9%) six pits G. amplus (14.3 - 18.7%) three Parapavo (10.0 - 19.5%) five Haliaeetus (17%) one
hawks, owls falcons to total raptores		9.5% - 59.7% 9.5; 11; 13.5; 15; 19.5 29; 29; 36.2; 59.7; (recent 85.8-96.2)

Falconiformes most abundant group in all pits
(of Recent pits, 28 had more owls than falconifs.)

Waterbirds & marsh	392 (9.0%)	4.1 - 37.4 % (7 - 154)
Anserif. } only	292 (6.7 %)	0.7 - 28% (1 - 135)
Charadriif. }		
Ciconiif.		
Colymbif.		

Species represented in 9 or more pits
- Ciconia maltha (all but Recent)
- Cathartes (all
- Coragyps all but 28 and 37
- Gymnogyps " " " " "
- Teratornis " " 37?
- Buteo jamaicensis (ALL)
- B. regalis (ALL)
- U. fragilis all but 28 and 37
- Aquila ALL
- Haliaeetus all but 36, and 28 and 37
- Spizaetus " " " " "
- Neogyps " " " " " "
- Neophrontops " " 28 and 37
- Polyborus (ALL)
- F. mexicanus all but 36, 77 and 37
- F. sparverius all but 60, 61
- Parapavo all but 37
- Grus canadensis all but 28
- Bubo virginianus all but 37
- Asio all but 77
- Corvus corax all but 77
- Sturnella neglecta all but 60, 77

Aquila chrysaetos & Parapavo californicus are the 2 most abundant species in combined comnt of all pits — Aquila first, comprising 20% of the total assemblage, Parapavo 13%. Pit by pit, however, Aquila is most abundant in only four pits, although it ranges from 15–31% in six; it is absent in one. Parapavo exceeds 10% of total comnt in 5 pits & is most abundant in 1; it too is absent in one pit.

Other predominating species are evident as individual pits are examined. The ancestral condor, Gymnogyps amplus, predominates in three (14%–18%) pits & was common in 1 (21%); Sphenotylus cuniculensis in two (13–3x%); Pica nuttalli in one (9%). Haliaeetus leucocephalus comprises 17% of total comnt in one pit, although it is surpassed by Aquila in this same pit so is not the most abundant species in any pit.

Ab wants to include in these data sets

More important than # spps. is no. of indivs. of each

As would be expected in these pits, which constituted baited traps for predators and scavengers, the raptorial birds — Falconiformes and Strigiformes — dominate the avifauna of every pit. However, the actual proportions vary; for example the Falconiformes (2 spp) constitute 83% of the avifauna in one pit, but only 38% in another, while Strigiformes (8-2 spps.) content varies from 63% to only 1%, (8 spp) the two raptorial groups combined constitute from 50 to 96% of the total avifauna of the separate pits.

25 sp. to 8 sp.

The only other order represented in all pits is the Passeriformes. (18 spp.) (1 pit has only 1 sp. another 15) Other orders of land birds represented are Galliformes (by Pandion in 11 quadrats) Columbiformes (in 7) 3 spp, Cuculiformes (in 5) and Piciformes (in 4), 5 spp.

only one has all 30 spps.

only one has all

In the combined pits, waterbirds make up only 5% of the avifauna. Ducks + geese occur in small nos. in nearly all pits, storks in 9 pits in 10 cranes, 1 coot in 1, a cormorant in 1 and two grebes in another. occasional herons, ibises + charadriiformes

The total no. of individual birds, of species associated with water ranges from 7 to 42 except in two pits where the number exceeds 100. It is suggested that a real concentration of water occurred in these two areas, whereas the other pits may have had only occasional ponds, or the liquid surface tar may at times have served as an attractor. gained the appearance of water.

Back to page 3, It's hands

OVER

small pencil F = - pits 28, 32 [illegible] 51 ocellas 10

	mus Pits - P.10	mus + Acad Pits - P.10
Podilymbus	1	1
Colymbus	1	1
Ardea	8	10
Casmerodius	2	2
Egretta	2	2
Butorides	1	1
Nycticorax	1	1
Botaurus	5	6
Mycteria wet-	0	1
m. amer.	0	1
Ciconia	29	32
Plegadis	1	1
Ajaia	1	1
Total ciconiiformes	50	58
Cygnus	1	2
Geese	76	105
anatinae indet.	8	23
Ducks	48	79
Total Anseres	133	209

	mus Pits - P.10	Acad + mus Pits - P.10
Cathartes	26	27
Coragyps	193	201
Gymnogyps	209	215
Breagyps	22	23
Teratornis	97	100
Elanus	2	2
Accipiter	2	2
Ac. velox	4	4
Ac. cooperii	33	36
Circus	94	97
B. borealis	52	54
B. swainsoni	94	96
B. lagopus	1	2
B. regalis	72	76
B. spec?	9	9
Wetmoregyps	4	6
Urubitinga	75	78
Morphnus	23	24
Sub total	1011	1052

	mus - P.10	Acad + mus - P.10
Aquila	889	909
Spizaetus	91	98
Haliaeetus	162	173
Neogyps	69	72
Neoph.	136	146
Polyborus	256	268
F. mex	12	14
F. pere.	11	13
F. colum.	9	9
F. spar.	46	49
Total	1581	1751
sub total	1011	1052
Total falconiformes	2592	2803
Lophortyx	107	112
Pavo pavo	540	570
Total	647	682
C. cani.	31	35
C. amer.	2	2
Fulica	1	1
Total	34	38

Oxyechus	16	18
Squatarola	1	2
Capella	8	8
Numenius	6	7
Phaeopus	4	5
Totanus	14	19
Limnodromus	3	3
Limosa	2	2
Recurvirostra	0	1
Sanderling?	18	18
Laridae	2	10
Rissa	0	1
Larus	1	1
Pelecina	1	1
Total	76	196
Columba	2	2
Ectopistes	3	3
Zenaidura	25	25
Total	30	33

			Totals	
Geococcyx	16	18	50	58
Tyto	105	113	133	209
Otus	12	13	2592	2803
Bubo	110	116	649	682
Glaucid.	103	103	34	38
Speotyto	120	123	76	96
Strix	13	14	30	33
Asio	95	104	16	18
Asyndesmus	1	1	459	587
Total Owls	459	587	4137	4494

Pt 60 (26 spp)

Aquila	44
Parabuteo	13
Coragyps	9
Polyborus	8
Bubo v.	8
Gymnogyps	7
Terathopius	7
Haliaeetus	6
Neogyps	5
Neoph.	5

77 (23 Sp.)

Gymnogyps	18
Aquila	17
Coragyps	14
Parabuteo	10
Terathopius	4
Neophr	3
Spiz	3
Hal.	3
B. jamaic.	3

Pts in order of abundance of species total extinct

	of divers (non pass) mammal ord'l abund.
16 (1456)	— 7
4 (857)	— 3
10 (657)	— 1
23 (559)	
61-67 (290)	— 2
Accip (275)	
13 (237)	— 5
60 (141)	— 4
36 (131)	
77 (96)	— 4

286) 970 (33 858 1120 — 1641) 15410 (9

Total with passerines	278	559	888	246	1661	161	~~183~~ 173	183	294	97	286	160	781	Typical Plants	Recent	Between
PA	3	4	13	16	36	37	60	61 67	77	Acad	28	10				
Individuals Total non-passerines (excluding PA)	206	531	857	237	1456	131	161	141	290	96	275	135	658			
# Extinct non-passerines (not PA or 2 para.)	57	185	425	87	573	28	1	60	124	43	102	4	37			
Total Raptores individuals (falcons, & strigiformes)	134	459	628	188	957	87	158	220	238	79	138	120	623			
Total hawks,	22	57	40	3	49	27	99	7	41	7	15	15	216			
falcons,	30	7	11	8	33	2	3	2	4	1	7	4	35			
owls	28	76	34	7	105	23	150	9	24	1	28	102	274			
Total Hawks owls falcons:	80	134	85	18	187	52	152	18	69	9	50	121	535			
Individuals: Swimmers	0	4	5	2	33	4	0	0	1	0	32	1	2			
Other water types (or marsh)	5	12	39	23	123	13	3	8	23	7	65	3	21			
Total Water Assoc'd	5	16	44	25	156	17	3	8	24	7	97	4	23			
% extinct to total	21%	33	47.8	35.4	34.5	0.7	0.6	41.9	42.9	44.3	35.6	2.5	4.7			
% Extinct to total non-passerines	28%	35%	49.5%	38%	39%	21%	0.6%	42.5%	43%	45%	37%	3%	5.6%	35-49 (8 pts)	0.6-5.6 (3 pts)	21-28 (2 pts)
% small raptores to total raptores	59.7	29.2	13.5	9.5	19.5	59.7	96.2	15	29	11.3	36.2	93	85.8	9.5-19.5 (5 pts)	85.8-96.2 (3 pts)	29-36.2 (3 pts) 59.7 (2 pts)
% water assoc'd to total non-passerine	2.3	3.1	5.1	10.5	10.7	12.9	1.8	5.6	8.2	7.2	35.2	3-	3.4			
No. extinct sp.	13	12	14	12	14	9	1	10	13	10	15	3	10			
% raptores to total	48%	82%	70%	76%	57%	54	91	82	80	81	50	94	94			
% owls to total raptores	10%															
% falcons, total																

																Total 173		Total 160
			3	4	13	16	36	60	61	77	acw			28 37	37	10	28
Total, Icterids			56	40	3	49	26	7	41	7	15			114	57.2% 99	22.7	9.3% 15
Total Juris Eagles			96	266	99	448	14	50	32	20	31				—	6.1% 48	2.5% 4
Total owls															28.8% 50		63.7% 102
Meadowlark			2	3	1	10	1	—	—	1	2				5	76	14
% + total passerines			28	31	9	189	30	2	5	1	11				12	123	25
% meadowlark total pass.			7.1%	9.6	11.1	5.2	3.3	—	—		18.1				41.6	61.7	4%
Corvus, Br. to C. caudus			1:1	0:4	0:1	2:23	0:3	0	1:1	0					0	12:1	3:1

Pit 3 Ordinary (43 spp)

Gymnogyps 88
Aquila - 85
Parapavo - 42
Coragyps - 35
Polyborus - 28
Tyto alba - 28
Asio - 23
Teratornis - 22
B. swainsoni - 19
Circus - 18

Pit 4 (41 spp.)

Aquila 238
Parapavo 173
Coragyps 61
Neophron 40
Polyborus 40
gymnogyps 33
Spizaetus 30
Haliaeetus 28
Bubo 21
"Geese" 21
Neogyps 20
Terry 20

Pit 61-67 (40 spp)

Gymnogyps 42
Aquila 28
Parapavo 24
Teratornis 22
Coragyps 18
B. regalis 16
Tyto 16
Buteogallus 13
Polyborus 13
Neophron 12

Pit 16 (57 spp.)

Aquila 382
Parapavo 238
Polyborus 144
Falconiformes 84
Haliaeetus 66
Bubo 59
Neophron 36
Spizaetus 35
Neogyps 32
B. fragilis 27
Coragyps 25

Pit 35 (33 spp.)

Picanut - 15
Aquila 14
Falconiformes 13
Circus 12
Parapavo 11
Tyto 9
B. swainsoni 8
"Geese" 7
Polyborus 6
Asio 6
Umbrotyga 5

Pit 10 (41 spp)

Spizaetus 104
Tyto 100
Circus 84
Asio 63
B. jamaicensis 49
Aquila 48
B. regalis 47
B. swainsoni 38
Falconiformes 15
Caracaras 10
Parapavo 10
Falco mex. 10

Acad 53 spp

Ducks 31
Parapavo 30
Aquila 20
Quadrangula 15
Geese 14
Polyborus 12
Haliaeetus 11
Neophron 10
Asio 9
Tyto 8
Shorebirds 8
Coragyps 8
Spizaetus 7

13, 60, 77, 28, 37; A

Pt 13

Aquila 58
Parapavo 27
Coragyps 18

28

Spelotyto 54
Typto 28
asio o cuns) 21

37

Buteo swainsoni 42
" regalis 32
Spelotyto cun 31

Pt 6 D

Aquila 44
Parapavo 13
Coragyps 9
Buteo 8
Polyborus

77

Gymnogyps 18
Aquila 17
Coragyps 14

A

Saphiotyto 30
Falco sparv. 23
Parapavo or Aquila 21

The difference between the old and more recent is quite marked, however, when the diurnal raptores are compared with the nocturnal. The dirunal (Order Falconiformes) xxxxxx compose

4.10.62 (?)

When the study was made of Pit 10, we observed certain criteria for judging age. Applying these criteria to the pits now studied individually, there are two other pits, in addition to Pit 10 that are obviously younger than the other nine. These are Pits 28 and 37. Not only do these pits have none of the large Pleistocene mammals, but the number of individuals of extinct species of birds is markedly fewer than the average (35%) noted in the original census.

Pit 28 has 1 Teratornis, 3 Polyborus, 1 Parapavo (3%)

Pit 37 has 1 Polybours (0.6 %)

Pit 10 has 6 Teratornis, 2 Urubitinga, 2 Morphnus, 4 Spizaetus
2 Neogyps, 4 Neophrontops, 3 Polyborus, 10 Parapavo (5.6%)

Small raptores comprised 85.8 % of the total raptorial count in Pit 10 In Pit 28 they are 93% and in Pit 37, 96.2%). In the other nine pits they vary from 9.5 - 59.2%.

Owls comprise 35 % of the Pit 10 avifauna, 30 % of that of Pit 37 and 63 % of that of Pit 28. In the other pits they vary from 1% to 14.2%.

The greater abundance of small raptores, particularly owls, is correlated with increase in small nocturnal mammals.

Meadowlarks comprise 61% of the passerine content in Pit 10, 45% in Pit 37, 51 % in Pit 28, and less than 20% in all other pits studied here.

There are nine pits, therefore, that have a fairly similar avifauna and seem, all to be of late Pleistocene age. As we have noted above, however, there is variation even within these nine pits (relative number of extinct species, predominance of different groups and species). The explanation of the variation may be either chronological or ecological. Pit no. 36, for example is lowest in number of individusal of extinct species, and highest in number of small raptores, particularly owls, though it is still markedly removed from the three Recent pits. At the other extreme,

There were ~~at least~~ only four species that occurred in all twelve pits (except occurred in all but 1

All pits

B. jamaicensis
B. regalis
Polyborus
Cathartes

All but 1 (omit 28)

Grus Canadensis

(omit 37)

Aquila chrysaetos
Parapavo
Bubo virginianus
Teratornis

omitP.77

Asio
C.corax

In all nine Pleistocene (in addition to those noted above)

Ciconia maltha
Geese of some kind (also Pit 10)
Coragyps occidentalis (also Pit 10)
Gymnogyps amplus (also Pit 10)
Buteogallus fragilis (also Pit 10
Spizaetus grinnelli (all but 36) (also Pit 10
Haliaeetus leucocephalsu (all but 36) (also Pit 10)
Neogyps errans (all but 36) (also Pit 10
Neophrontops (xxxxxxxx (also Pit 10)

A more detailed analysis of the data, suggests that relative ages of some of the older pits might be estimated. For example:

Pits 4 and 77 are near the maximum in number of individuals of extinct species; and near the minimum in those of small raptores -- thus suggesting relatively greater age.

Pits 36 and A on the other hand occupy an intermediate position between the older ~~and~~ pits and the 3 obviously more recent ones in both of these factors:

	28-10	36-A	others
Extinct ind.	0.6-4.7%	17%-21%	33% - 47.8%
Small rapts.	85.8-96.2	59.7(both)	9.5 - 36.2

Abundance of Galliformes does not apply (well rep'd here)

Pit 3 has been dated at around 14,000 years BP
More to be done

The figures here suggest that these pits (4 & 77 i.e.) may be older than this.

			77
extinct	33%	(P 4) 49.8%	44.3
small rapt.	29.2	13.5	11.3

spp. more than 10% of adults

Pt 3 (302)
q. ampl. 88 ✓
a. obsp. 85 ✓ 15.1

Pt 4 (277) 16.8%
Aquila 235 ✓
Parapavo 173 19.5 ✓

Pt 13 (241)
aquila 58 24%
foliaceus 41
Parapavo 24 10% ✓

Pt 16 (1672)
Aquila 382 ✓ 22.8%
Parapavo 238 14.2% ✓

Pt 36 (164)
Nivo
(Psa nuttalli 15)

Pt 60 (142)
Aquila 44 30.9%
(Parapavo 13)

Pt 61-67 (294)
Q. ampl. 42 ✓
(Aquila 28)

Pt 77 (97)
Q. ampl. 15 ✓ 18+
Craspedia 17 17.5%
Aquila 17 17.5% ✓
Parapavo 10 10.3% ✓

Acad. (284)
Parapavo 30 10.4% ✓

T Pal (4344)
Aquila 886 (20%)
Parapavo 567 (13%)

Fig 5.

Cathaires Coragyps — (in percent) of Ratio abundance of Cathartes aura to extinct Coragyps occidentalis

Rearrange arbitrarily to not in order (5)

Relative abundance of Orders of birds

1 = Falconiformes
2 = Strigiformes
3 = Galliformes
4 = Passeriformes
5 = Columbiformes
6 = Apodiformes
7 = ~~Apodiformes~~ Cuculiformes
8 = Anseriformes
9 = Charadriiformes

(shaded) = water bird

Omitting Columbiformes & Pelecaniformes which occur rarely in pit each

Table II

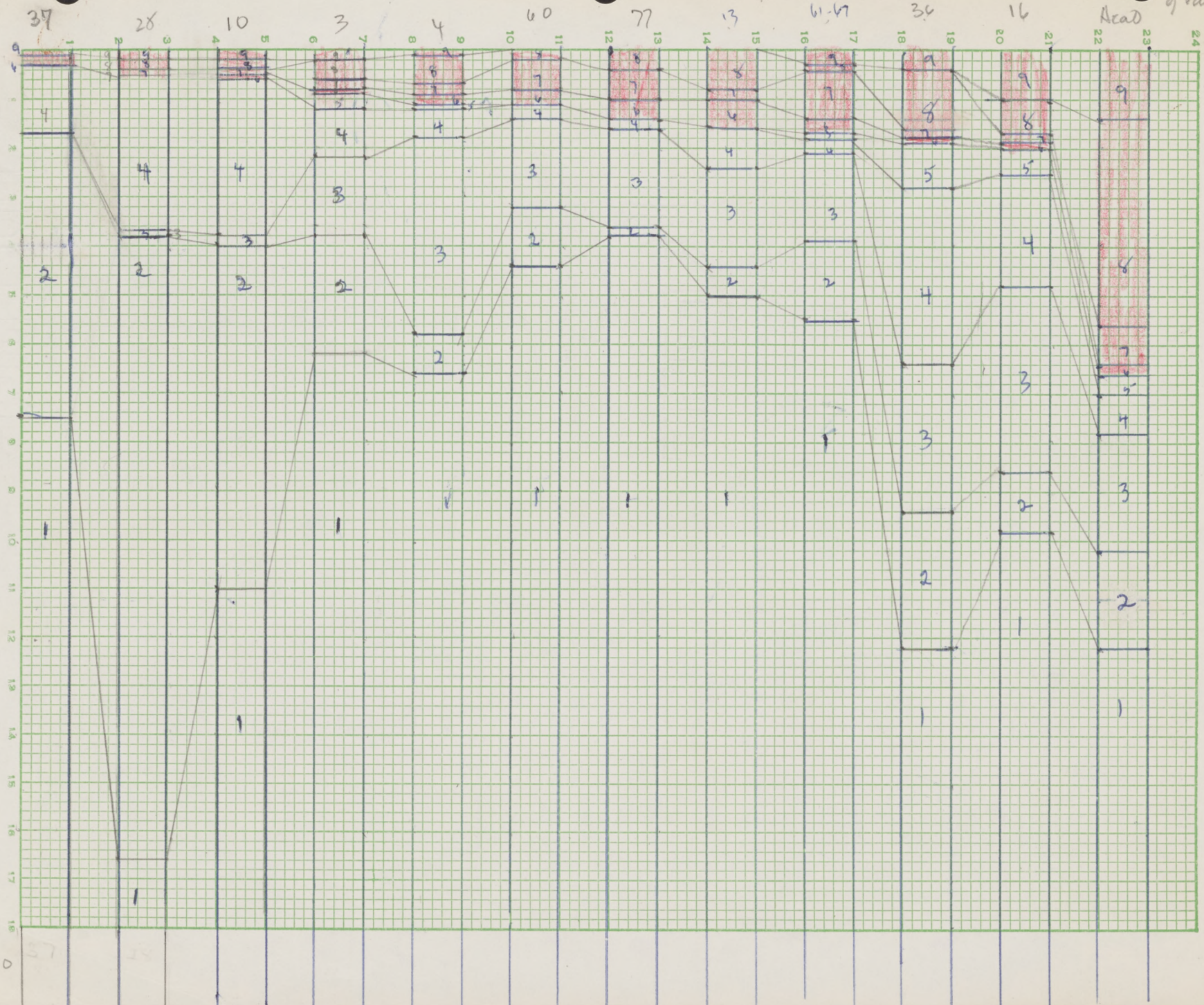
Pits arranged in order of abbreviated Hapcaripenes

Pit 77 | Pit 60 | Pit 13 | Pit 61-67 | Pit 3 | Pit 4 | Pit 16 | Acad. Pit | Pit 36 | Pit 37 | Pit 10 | Pit 28

77 60 13 61-67 3 4 16 Acad 36 37 10 28

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)

Table II Relative abundance of Orders of Birds in twelve pits. Arranged according to abundance of land birds



+10

Table I

Redo, placing pits in order of size of assemblage (abundance of individuals)

Seriation in order of abundance of Nannine OT

	Pit A	Pit 3	Pit 4	Pit 10	Pit 13	Pit 16	Pit 28	Pit 34	Pit 37	Pit 60	Pit 61-67	Pit 77	Acad. Pit	Totals for 13 pits
		4	2	3	7	1	10	9	8	11	5	12	6	
Colymbiformes (Grebes)														
Podiceps, sp.		-	-	-	-	1	-	-	-	-	-	-	-	1
Podilymbus podiceps		-	-	-	-	1	-	-	-	-	-	-	-	1
Pelecaniformes (Cormorants etc)														
Phalacrocorax, sp.		-	-	2	-	-	-	-	-	-	-	-	-	2
Ciconiiformes (Herons, Storks, Ibises)														
Ardea herodias		3	-	1	-	1	-	-	-	1	3	-	2	11
Butorides virescens		-	-	-	-	-	-	-	-	-	1	-	-	1
Floridea caerulea		-	-	-	-	-	-	-	-	-	1	-	3	4
Casmerodius albus		-	-	-	-	-	1	-	-	-	1	-	-	2
Nycticorax nycticorax		-	-	-	-	-	-	-	-	-	1	-	-	1
Botaurus lentiginosus		2	-	2	-	1	-	1?	-	-	2	-	1	9
*Mycteria wetmorei		-	-	-	-	-	-	-	-	-	-	-	1	1
*Ciconia maltha	1	2	~~6~~	1?	2	10	-	1	-	3	4	2	3	~~36~~ 37
Plegadis chihi		-	-	-	-	-	-	-	-	-	1	-	1?	2
Ajaia ajaja ?		-	-	-	-	-	-	-	-	-	-	1	-	1
Anseriformes (Ducks, Geese, Swans)														
Olor columbianus		-	-	-	-	-	-	-	-	-	-	-	1	1
Branta canadensis		1	7	-	-	3	-	-	-	-	-	-	3	14
Branta nigricans		-	1?	-	3	2	-	-	-	-	-	-	-	6
Geese (four? sps.)	1	8 (2 sp.)	13 (4 sp?)	4 (3 sp.)	6 (2 sp?)	15 (4 sp.?)	-	4 (2 sp.)	-	1	1	2	11 (3 sp?)	~~65~~ 66

	Pit A	Pit 3	Pit 4	Pit 10	Pit 13	Pit 16	Pit 28	Pit 36	Pit 37	Pit 60	Pit 61-67	Pit 77	Asphalt Pit	Total for 12 pits
Anseriformes cont'd														
* Anabernicula minuscula		—	—	—	—	~~3~~ 2	1	1	—	—	—	—	~~19~~ 12	~~24~~ 20
		(2 sp.)	(2 sp.)	(2 sp.)	(2 sp.)	(6 sp.)		(3 sp.)					(6 sp.)	
Ducks (~~seven~~ six? sps.)		4	4	2	2	32	1	4	—	—	1	—	31	81
Falconiformes														
Cathartes aura	1	2	4	10	1	2	1	3	5	1	2	1	1	~~33~~ 34
* Coragyps occidentalis		38	61	3	18	25	—	1	—	9	18	14	8	195
* ~~Hy~~mnogyps amplus	2	~~88~~	33	1	11	4	—	3	—	7	42	18	6	~~213~~ 213
* Breagyps clarki		7	3	—	1	1	—	—	—	—	6	2	1	21
* Teratornis merriami	1	22	20	6	5	13	1?	1	—	7	22	4	3	105
Elanus leucurus		1	—	1	—	—	—	1	—	—	—	—	—	3
Accipiter gentilis		—	—	—	—	2	—	—	—	—	—	—	—	2
Accipiter striatus		1	1	1	—	2	—	—	—	—	—	—	—	5
Accipiter cooperi	9	2	16	1	—	17	—	—	—	2	2	—	3	~~53~~ 52
Buteo jamaicensis	4	6	8	49	1	17	2	3	4	1	6	3	2	106
Buteo swainsoni	1	19	1	38	—	1	4	8	42		13	1	2	~~130~~ 129
Buteo lagopus	1?	—	—	4	—	—	1	—	—	—	—	—	1	7
Buteo regalis	2	10	4	47	1	2	2	3	32	2	16	2	4	~~125~~ 125
Buteo, sp.?	2	—	2	—	1	4	—	—	—	1	—	1	—	14
* Wetmoregyps daggetti	3	—	4	—	—	—	—	—	—	—	—	—	2	9
* Hypomorphnus fragilis	4	9	17	2	4	27	—	5	—	4	6	2	3	~~83~~ 79

? Buteogallus

	Pit A	Pit 3	Pit 4	Pit 10	Pit 13	Pit 16	Pit 28	Pit 36	Pit 37	Pit 60	Pit 61-67	Pit 77	Acad Pit	Total of 12 pits
Falconiformes cont'd														
* Morphnus woodwardi		4	5	2	—	3	—	—	—	2	4		1	25
Aquila chrysaetos	22	85	238	48	58	382	4	14	—	44	28	17	20	960 439
*Spizaetus grinnelli	4	8	30	4	3	35	—	—	—	4	7	3	7	10 5
Haliaeetus leucocephalus	2	11	28	3	41	66	—	—	—	6	4	3	11	17 5
* Neogyps errans	3	3	20	2	2	32	—	—	—	5	3	1	3	74
*Neophrontops americanus	2	18	40	4	10	36	—	2	—	5	12	3	10	142
Circus cyaneus	3	18	8	84	—	4	6	12	21	1	4	—	3	164
*Caracara prelutosus	14	28	40	3	15	144	3	6	1	8	13	2	12	279 275
Falco mexicanus	1	1	2	10	2	3	1	—	—	1	1		2	24 23
Falco peregrinus	2	1	—	15	1	3	1	—	1	—	3	—	2	29 27
Falco columbarius	5	2	1	2	1	3	1	—	—	1	—	—	—	16
Falco sparverius	23	3	8	8	4	24	1	2	2	—	—	1	3	79 56
Galliformes														1290 1689
Lophortyx californicus	27	—	7	1	—	84	—	13	—	—	1	—	5	138 111
* Parapavo californicus	21	42 7	173 34	10	24 12	238 35	1? 1	11 6	—	13 1	24 7	10 1	30	599 578
Gruiformes														1290 43
Grus americana		—	—	—	1	1	—	—	—	—	—	—	—	2
Grus canadensis	1	2	6	5	6	6	—	1	2	2	4	2	4	41 40
Fulica americana		—	1	—	—	—	—	—	—	—	—	—	—	1

x = not in western list from PRBS

	Pit A	Pit 3	Pit 4	Pit 10	Pit 13	Pit 16	Pit 28	Pit 36	Pit 37	Pit 60	Pit 61-67	Pit 77	Acad Pit	Totals of 12 pits	
Charadriiformes														123	270
Charadrius vociferus		–	–	1	–	14	–	1	–	–	–	–	2	1	8
Squatarola squatarola		–	1	+	–	–	–	–	–	–	–	–	1		3
Capella gallinago		1	–	–	–	6	–	–	–	–	1	–	–		8
Numenius americanus		–	–	2	–	1	–	–	1	–	3	–	1		8
Numenius phaeopus		2	1?	1	–	–	1?	–	–	–	–	–	1		6
Catoptrophorus semipalmatus		–	–	2	–	–	–	–	–	–	–	–	–		2
Totanus melanoleucus		–	–	–	–	12	–	2	–	–	–	–	5	1	9
Erolia alpina		–	–	–	–	1	–	–	–	–	–	–	–		1
Limnodromus griseus		–	–	–	–	4	–	–	–	–	–	–	–		4
Limosa fedoa ?		1	–	–	–	1	1?	–	–	–	–	–	–		3
Crocethia alba ?		–	–	–	–	16	–	3	–	–	–	–	–		19 +16
Recurvirostra americana		–	–	–	–	–	–	–	–	–	–	–	1		1
Phalaropus fulicarius?!		–	–	–	–	18	–	2	–	–	–	–	–		20 +8
Shorebirds, 3 # sps.?	3sp. 3	–	–	–	–	(3 sp.) 5	–	–	–	–	–	–	(2 sp.) 8		16 +3
Rissa tridactyla ?		–	–	–	–	–	–	–	–	–	–	–	1		1
Larus sps.		–	–	1	–	1	–	–	–	–	–	–	–		2
Columbiformes														33	70
Columba fasciata	1	–	1	–	–	1	–	–	–	–	–	–	–		3 +1
*Ectopistes migratorius		–	–	–	–	1	–	1	–	–	1	–	–		3
Zenaidura macroura	2	5	–	1	–	17	–	2	–	–	–	–	3		30 +28

	Pit A	Pit 3	Pit 4	Pit 10	Pit 13	Pit 16	Pit 28	Pit 36	Pit 37	Pit 60	Pit 61-67	Pit 77	Acad. Pit	Totals of 12 pits
Cuculiformes (Roadrunners, etc.)														
Geococcyx californianus	8	1	4	–	–	9	–	1	–	–	–	–	2	25
Strigiformes (owls)														
Tyto alba	3	28	3	100	–	2	22	9	14	–	16	–	8	205
Otus asio	4	1	–	–	–	5	2	2	1	–	–	–	1	16
Bubo virginianus	8	6	21	7	6	59	1	2	–	8	3	1	6	128
Glaucidium gnoma	2?	1?	–	–	–	1?	–	1	–	–	–	–	–	5
Speotyto cunicularia	6	9	3	104	–	15	56	1	31	–	–	–	3	228
* Strix brea	4	2	2	–	–	5	–	1	–	–	2	–	1	17
Asio, 2 sps.	3	23	5	63	1	18	21	6	4	1	3	–	9	157
Aegolius acadicus		–	–	–	–	1	–	–	–	–	–	–	–	1
Caprimulgiformes (Poorwills, etc.) Phalaenoptilus nuttallii	7													23
Piciformes (woodpeckers)														
Colaptes cafer	5	–	1	–	–	10	–	2	–	–	–	–	–	18
Dryocopus pileatus		–	–	–	–	1	–	–	–	–	–	–	–	1
Asymdesmus lewisi		1	–	–	–	5	–	1	–	–	–	–	–	7
Sphyrapicus, sp.		–	–	–	–	1	–	–	–	–	–	–	–	1
Dryobates, sp.		–	–	–	–	1	–	–	–	–	–	–	–	1
Woodpeckers 2 or 3 sps.	4													4
Passeriformes (Perching Birds)														47
Tyrannus, sp.	3	–	–	–	–	1	–	–	–	–	–	–	–	4
Eremophila alpestris		–	–	–	–	–	–	–	1	–	–	–	–	1

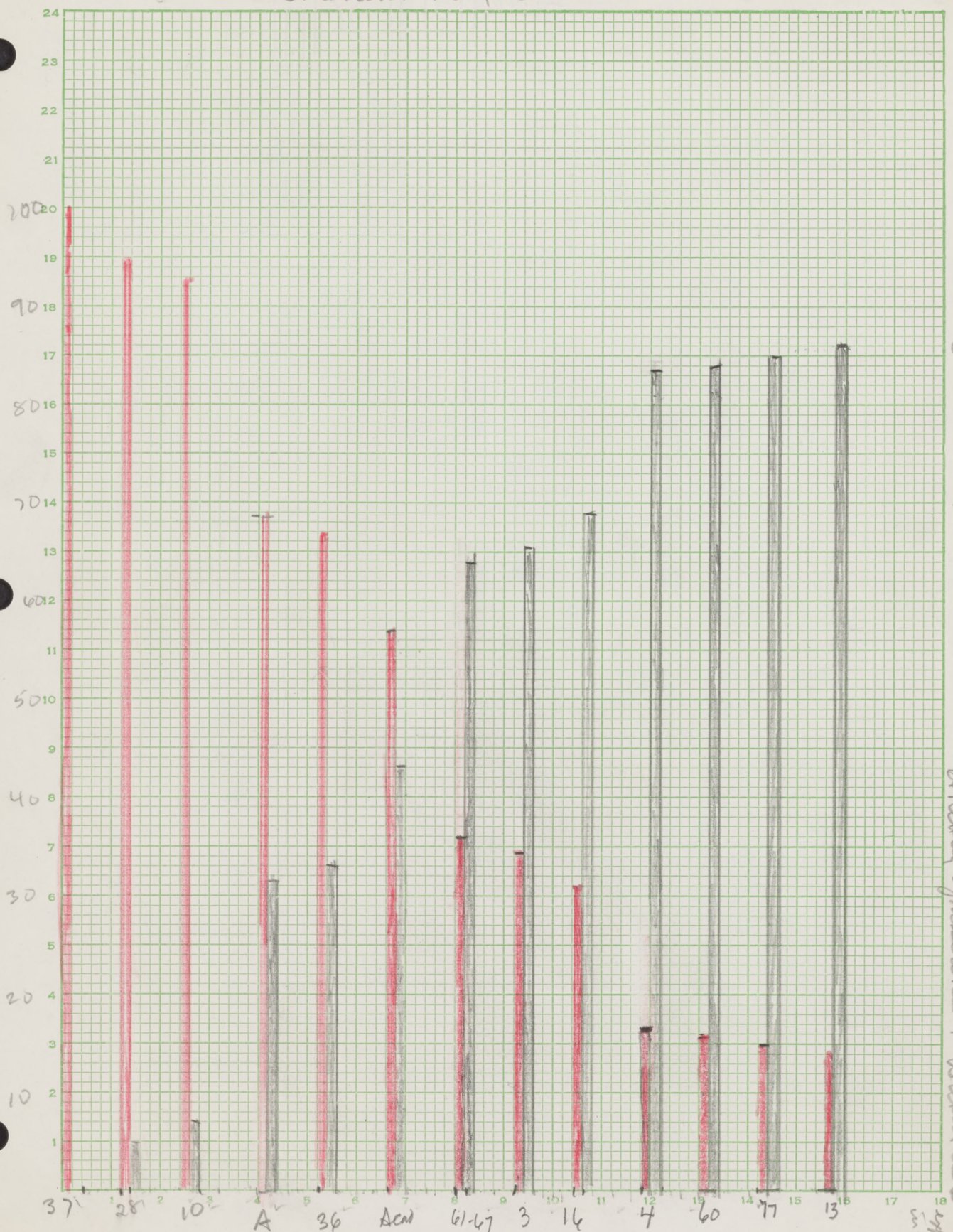
	Pit A	Pit 3	Pit 4	Pit 10	Pit 13	Pit 16	Pit 28	Pit 36	Pit 37	Pit 60	Pit 61-67	Pit 77	Acad Pit	Totals of 12 pits
Passeriformes, cont'd														
Cyanocitta stelleri	2	1	—	—	—	1	—	—	—	—	—	—	—	4 ~~2~~
Aphelocoma coerulescens	6?	—	—	—	—	3	—	1	—	—	—	—	—	4
Pica nuttalli	33?	12	11	1	4	91	—	15	—	1	—	—	6	141
Corvus corax	3	11	12	33	3	30	5	3	6	1	3	—	2	109
Corvus cryptoleucus		—	—	—	—	—	—	1	—	—	—	—	—	1
Corvus brachyrhynchus	2	1	—	12	—	2	3	—	—	—	1	—	1	20
Corvus caurinus	6?	1	4	1	1	23	1	3	—	—	—	—	—	34
Nucifraga columbiana 2 Toxostoma redivivum 3		—	—	—	—	2	—	1	—	—	—	—	—	3
Oreoscoptes montanus		—	—	—	—	1	—	—	—	—	—	—	—	1
Turdus migratorius	2	—	—	—	—	14	—	2	—	—	—	—	—	16
Sialia, sp.	5	—	—	—	—	—	—	2	—	—	—	—	—	2
Lanius ludovicianus	2	—	—	—	—	1	—	—	—	—	—	—	—	1
Sturnella neglecta	10	2	3	76	1	10	14	1	5	—	—	1	2	115
Blackbird, ~~2~~ sp.	3	—	1	1	—	13 (2 sp.)	2	2	—	—	—	—	—	19
Molothrus ater		—	—	—	—	1	—	—	—	—	—	—	—	1
Icterus, sp. *Pandanaris ~~ensuyae~~	6 1													
~~Total number individuals~~	313	562	~~887~~	783	240	~~1674~~	161	168	173	142	294	99	~~285~~ 292	~~5718~~ 5465
Total number species	60	~~53~~ 54	~~50~~ 52	53	~~33~~ 35	~~87~~ 93	29	~~49~~ 52	17	~~28~~ 28	42	~~24~~ 25	~~64~~ 66	113 ~~114~~

Insert Pit A column here

	Pit A	Pit 16	Pit 4	Pit 10	Pit 3	Pit 61-67	Pit Acad.	Pit 13	Pit 37	Pit 36	Pit 28	Pit 60	Pit 77	Totals 13 Pits
PASSERIFORMES continued														
Family Fringillidae														
Pheucticus melanocephalus	1													1
Hesperiphona vespertina	1													1
Spinus tristis	3													3
*Pipilo angelensis	11													11
Pipilo maculatus	4													4
Pipilo fuscus	2													2
Pooecetes gramineus	1													1
Chondestes grammacus	3													3
Amphispiza bilineata	4													4
Spizella, sp.	6													6
Zonotrichia leucophrys	6													6
Passerella iliaca	2													2
Melospiza melodia	10													10
Fringillidae, sp.	6													6
Total fringillidae	60													
Total Individuals	373	<As Above					<As Above							584
Total Species	74	<As Above					<As Above							133

Insert Pit A column here

used full 13 sp. & adjusted rel. abund. in final fig. 5'
Results in transferris A+36 in post. + 68 + 13
otherwise very similar



Relative abundance of the "critical" species common to both lakes, expressed in percent of total. The assemblages omitting parasites & waterfowl as explained in text.

	Pit 3	Pit 4	Pit 13	Pit 16	Pit 36	Pit 60	Pit 61-67	Pit 77	Academy Pit	Total	Total all Pleistocene	Recent Pits 2, 5, 32, 37	Pits 10 Recent 28, 36 70 Fals	13 ext. Pit A	# pits sp. repd Pleisto	Rec
Colymbus, sp.				1						1					1	
Podilymbus podiceps				1						1						
Phalacrocorax Ardea herodias	3			1		1	3		2	10			1		5	1
Butorides virescens							1			1					1	
Casmerodius albus							1		2	1		1	1		1	1
~~Leucophoyx thula~~ OR Florida caerulea							1		3	5					3	
~~Butorides virescens~~																
Nycticorax nycticorax							1			1					1	
Botaurus lentiginosus	2			1	1?		2		1	5	6		2		4	1
*Mycteria wetmorei									1	1					1*	
Mycteria americana ?									1	1					1	
*Ciconia maltha	2	8	2	10	1	3	4	2	3	35	36			1	9*	0
Plegadis chihi							1		1?	2					2	
Ajaia ajaja ?								1		1					1	
B. canadensis (lge)	1	11		8	1											
B. nigricans (sm) see later figs 17.4.62		1	3	2												
Other geese	8	10	6	10	4	1	1	2	14							
Cygnus columbianus									1	1	2				1	
Total geese (4 sp ♂? 2 ♀?)	8	21	9	22	7	21	1	2	14	88	90		4	1	9	1
*Anabernicula minuscula		2		3	1				15	23	24?	1	1	1	4	
Total other ducks (7 sps, 3)	4	4	2	32	4		1		31	78	79	1	3		7	2

Branta canadensis, Anas albifrons, Anser hyperboreus, Anser cf. rossii (?) Branta nigricans

Anas platyrhynchos, Anas strepera, Anas carolinensis, teal (?), Spatula clypeata, Aythya valisineria (?), Aythya sp.

21 spp

	P*A	Pit 3	Pit 4	Pit 13	Pit 16	Pit 36	Pit 60	Pits 61-67	Pit 77	Academy Pit	Total	Total acc Plaintext	Results 8 to 28 & 37	Total Results 10, 28 and 37	Pit 10	If Pits 8 & 10 Results	Rev
Cathartes aura	1	2	4	1	2	3	1	2	1	1	17	20	1 in 28, 5 in 37: 6	10 in P10: 16	10	9	2
*Coragyps occidentalis		38	61	18	25	1	9	18	14	8	192	198		3	3	9*	1*
?Gymnogyps amplus	2 (3,27,62)	88	33	11	4	3	7	42	18	6	212	214		1	1	9	1
*Breagyps clarki		7	3	1	1			6	2	1	21	23				7*	
*Teratornis merriami	1	22	20	5	13	1	7	22	4	3	97	99	(-) P10 28: 1?	7	6	9*	2*
*Catharnis gracilis U.C. (2)																	
Elanus leucurus		1				1					2			1	1	2	1
Accipiter gentilis	9				2						2					1	0
Accipiter striatus		1	1		2						4			1	1	3	1
Accipiter cooperi	9	2	16		17		2	2		3	42	43		1	1	6	1
Buteo jamaicensis	6	6	8	1	17	3	1	6	3	2	47	52	2 P28, 4 P37: 6	49 P10: 55	49	9	2
Buteo swainsoni	1	19	1		1	8		13	1	2	45	50	4 P28, 42 P37: 46	38 P10: 84	38	7	2
Buteo lagopus	(3,27,62)									1	1		P.28: 1	4 P10: 5	4	1	2
Buteo regalis	(3,27,62)	10	4	1	2	3	2	16	2	4	44	49	2 P.28, 34 P.37: 34	47 P.10: 81	47	9	2
Circus cyaneus	2 (3,27,62)	18	8		4	12	1	4		3	50	57	6 in 28, 21 in 37: 27	84 in P10: 111	84	7	2
?Buteo species	2		2	1	4		1		1		9					5	0
*Wetmoregyps daggetti	3		4							2	9					2	
*Urubitinga gracilis	4 (3,27,62)	9	17	4	27	5	4	6	2	3	77	78		2	2	9*	1*
*Morphnus woodwardi		6	5		3		2	6		1	23			2	2	6*	1*
Aquila chrysaetus	2 (3,27,62)	85	238	58	382	14	44	28	17	20	886	904	P.28: 4	48 P10: 52	48	9*	2
*Spizaetus grinnelli	4	8	30	3	35		4	7	3	7	97	98		4	4	8*	1*
Haliaeetus leucocephalus	2	11	28	41	66		6	4	3	11	170	173		3	3	8*	1*

12 spp

70

	Pit A (3, 17, 60)	Pit 3	Pit 4	Pit 13	Pit 16	Pit 36	Pit 60	Pit 61-67	Pit 77	Casadenia Pit	Total	Total all Pleistocene	Recent Pit 28 & 37	Total all Recent 10, 28, 37	Pit 10		
*Neogyps errans	3	3	20	2	32		5	3	1	3	69	71		2	2	8*	0*
*Neophrontops americanus	2	18	40	10	36	2	5	12	3	10	136 138	138		4	4	9*	1*
*Polyborus prelutosus	14	28	40	15	144	6	8	13	2	12	268	273	3 P.28 1 P.37 4	3 P.10 7	3	9*	2 or 3
Falco mexicanus		1	2	2	3		1	1		2	12		P 28 1	10 P.10 11	10	7	2
Falco peregrinus	2	1		1	3			3		2	10	11	1 P.28 1 P.37 2	15 P.10 17	15	5	2 or 3
Falco columbarius	5	2	1	1	3		1				8		P 28 1	2 P.10 3	2	5	2
Falco sparverius	23	3	8	4	24	2			1	3	45	46	1 P.28 2 P.37 3	8 P.10 11	8	7	2 or 3
Lophortyx californicus	30		7		84	13		1		5	110	112		1	1	5	1
*Parapavo californicus	21	42	173	24	238	11	13	26	10	30	567	568	Pit 28 1	11	10	9	2
Grus canadensis	1	2	6	6	6	1	2	4	2	4	33		P 37 2	7	5	9	2 or 3
Grus americana				1	1						2					2	0
Fulica americana			1								1					1	
			45														
Oxyechus vociferus																	

17 spp. Cathartes aura V C

	Pt A	Pt 3	Pt 4	Pt 13	Pt 16	Pt 36	Pt 60	Pt 61-67	Pt 77	Academy Pt	Total sp	Total sp Pleistocene	Recent Pts 28 & 37	Total sp Recent 10, 28, 37	Pt 16		
Charadrius vociferus					14	1				2	17	18?		1	1	3	UC Pt 1059 (1)
Squatarola squatarola			1							1	2			1	1	2	1
Capella gallinago		1			6			1			8					3	1
Numenius americanus					1	F278 (565) F8453		3		1	5	6	Pt 37 1	3 2	2	3	1
Numenius phaeopus		2	1?							1	4		Pt 28 1?	2	1	3	2
Totanus melanoleucus G209 & 199 & 631 + 642 (10) + 2 "Pt 16"					12	2				5	19					3	0
Erolia alpina check this ident.					1						1					1	
Limnodromus griseus					4 3						3					1	UC (1) Pt 1059
Limosa fedoa ?		1			1						2		Pt 28 1?	2 8 1		2	1
Crocethia alba?					16						16					1	0
Recurvirostra americana										1	1					1	
Catoptrophorus semipalmatus Shorebird, sp.? 3 spp.	3				3+					8	9			2	2	2	
~~Larus~~, sp.														1	Pt 10 K	1	
Rissa tridactyla?										1	1					1	
Larus brachyrhynchus?					1						1						
Macronectes Phalacrocorax pelecanoides?					2 18						2 18						
Columba fasciata	1		1		1						2					2	
*Ectopistes migratorius					1	1		1			3					3*	
Zenaidura macroura	2	5			17	2				3	27	18		Pt 10 1	1	4	1

Ciconia taurica - still porous bone, but tarsus + metatarsus fused

R 622

B 5751

R 639 (quite porous

R 417

R 2001 (Pl 4)

Distal end tibiotarsus - Ciconia nigra porous

K 2963

F 418

Prox end tibiotarsus - porous

F 629

	12 spp.	Pit ★	Pt 3	Pt 4	Pt 13	Pt 14	Pt 36	Pt 60	Pit 61-67	Pt 77	Academy Pit	Total	Total all Museum	Records Pt 28 & 37	Total all Records 10, 28, 36			
Geococcyx californianus		8	1	4		9	1				2	17	18				5	
T																		
Tyto alba		3	28	3		2	9		16		8	66	73	22/14 P. 28 P. 37 36	100 P. 10 136	100	6	2 3
Otus asio		5 ★ (3, 27, 62)	1			5	2				1	9	10	2/1 P. 28 P. 37 3	3		4	2
Bubo virginianus		8	6	21	6	59	2	8	3	1	6	112	115	P. 28 1	8	7	4	2
Glaucidium gnoma			1?			1?	1					3					3	
Speotyto cunicularia		6	9	3		15	1				3	31		56 P. 28 31 P. 37 87	104 P. 10 191	104	5	2 3
*Strix brea		4	2	2		5	1		2		1	13	14				6 ★	
Asio 2? sps.		3	23	5	1	18	6	1	3		9	66	75	21 P. 28 4 P. 37 25	63 P. 10 88	2 spec incl 63	8	2 3
Cryptoglaux acadica							1					1						
Asyndesmus lewisi			1			5	4, 23, 61 1					7						VC 1059 1 in 2
Colaptes cafer		5 P ★		1		10	2					13						VC comm
Cephloeus pileatus	a. miller identified cond. 1937					4, 23, 61 1						1						
Sphyrapicus (?)						1						1						
Dryobates (?)						1						1						
Phainopepla (probable)		10																
Krispulus		2																
Toxostoma sp.						1												

* ✓ = listed in 1st census

G 2x5 hooded black humeus
G 247 red-winged blackbirds humeus

	Pit 3	Pit 4	Pit 13	Pit 10	Pit 36	Pit 60	Pit 64 67	Pit 77	Area Pit	Total		Pits 28 and 37	Total 28, 37 and 10	Pit 10	Reports by A. Miller ? U.C. pits	UC 2051 Reports
✗ Tyrannus, sp.				1						1					✓	
✗ Otocoris alpestris												Pit 37 1	1		✓	
✗ Cyanocitta stelleri	1			1						2						
✗ Aphelocoma californica				3	1					4					✓	
✗ Pica nuttalli	12	11	4	91	15	1			6	140			1	1	✓	
✗ Corvus corax	11	12	3	30	3	1	3		2	67		5/P.28 10/P.37 11	33/P10 44	33	✓	
✗ Corvus cryptoleucus? where?					1 caught 4-23-64					1						
✗ Corvus brachyrhynchus	1			2			1		1	5		Pit 28 3	12/P. 10 15	12	✓	
✗ Corvus caurinus	1	4	1	23	3		1			32		Pit 28 1	2	1	✓	
✗ Penthestes, sp.															✓	
✗ Toxostoma redivivum				2	1					3					✓	
✗ Oreoscoptes montanus				1						1						
✗ Bombycilla cedrorum															✓	
Turdus migratorius				14	2					16						
✗ Sialia, sp.					2					2					✓	
✗ Lanius ludovicianus				1						1					✓	
✗ Sturnella neglecta	2 (99%)	3 (99%)	1 (100%)	10 (59%)	1 (39%)			1 (100%)	2 (18%)	20		5 (51%) 14/P.28 5/P.37 19	95 (76/P10)	76 (61%)	✓	
✗✗ Blackbird (2 sps)		1		8 (13 yg)	2 yg					16		45% Pit 28 2 yg	3	1	xanthocephalus	
✗ Icterus, sp.															✓	
Molothrus ater				1						1						
✗ Euphagus magnirostris															✓	
✗ Pandanaris convexa										TOTAL		Pit 28	Pit 37	Pit 10	Pit 1 A	Total 28, 37, 10
4.29.63 TOTALS Totals (indivs)	562	887	241	1672	164	142	294	97	286	[5461]		161	173	788		1116
(approx. sp. estimates) → " species	53	50	33	87	50	28	47	24	65	[113]		28	17	52		57
includes " " extinct	13	14	11	15	11	11	14	11	16	[17]		4	1	10		11
" " ant.																
antlers in ( ) " " " indivs.	273(88)	456(33)	95(11)	575(4)	33(3)	67 (7)	168(42)	61 (14)	106 (6)	[1878(213)]		6(0)	1 (0)	37(1)		44(6)

antlers in Carnal Inventory

15 sp

					3	4	13	16	36	60	61 67	77	Acad	Tide		28 37	28 37 10	10	PRA	UC # 2051 Riverside
Pheucticus melanocephalus																		•	1 A	
Hesperiphona vespertina																		•	1"	
Spinus pinus																				1
Spinus tristis																		3 cats	3 "	7?
Pipilo fuscus																		•	2	
Pipilo maculatus																		2 cats 2 uncat	~~4~~ "	
Pipilo angelensis																		8 cats 3 uncats	~~11~~ "	
Pooecetes gramineus																		•	1 "	
Chondestes grammacus																		•	3 "	
Amphizpiza bilineata																		4 cats	4 "	1
Amphizpiza belli																				7
Spizella (passerina) ~~8~~ " (in cat.)																		•	6 "	1
Zonotrichia leucophrys																		cat 3 uncat 3	~~6~~	
Passerella iliaca																		•	2 "	
Melospiza melodia																		•	10 "	
Fringillidae sp?																		uncat	6 "	

Extract

no extract
in dio. — $1

(#) = extinct

OK May 2 1962

	1931 census	Pit A	3	4	13	16	36	60	61-67	77	Acad	Total Pleisto		Pit 10	28	37	Total Recent		Pit A			
Depth of Pit			26'	25'	21'	27'	11'	15½'	20'	20½'	20'			13½'	8½'	8'						
Phalacrocoracidae 1			—	—	—	—	—	—	—	—	—	0	0	1 sp. 2 indiv			1 2		0	0		
Colymbiformes	~~1~~																					
Species 2	1		—	—	—	2	—	—	—	—	—	2	0	—	—	—	0		0	0		
Indivs.	1		—	—	—	2	—	—	—	—	—	2	0	—	—	—	0		0	0	0	
Ciconiiformes	~~38~~																					
2 ext. Species 10	8(1)		3(1)	1(1)	1(1)	3(1)	2(1)	2(1)	8(1)	2(1)	7(2)	11(2)	2	2	1	—	3	0	1	1		
indivs.	38(28)		7(2)	8(8)	2(2)	12(10)	2(1)	4(3)	14(4)	3(2)	12(4)	64(36)	36	3	1	—	4	0	1	1	.35	.5
Anseriformes (1 known 3 more unidentifiable)	~~38~~ 14																					
1 ext. Species ?	?		5	6	4	10(1)	6(1)	1	2	1	11(1)	13?(1)	1	5	2(1)	—	6?	1?	~~1~~	0		
indivs.	98		13	25	11	54(2)	9(1)	1	2	2	6(1) (5)	178 (18)	18	6	2(1)	—	8	1?	~~1~~	0	.7	1.0
Falconiformes	~~25~~ 26																					
28 species (2 ext. in 1931 no specific ID)	26(12)		24(10)	24(11)	19(9)	25(10)	14(6)	19(9)	20(10)	17(9)	23(11)	28(1)	11	24(9)	13(2)	8(1)	24	9	20	8		
11 ext. indivs.	2526 (1172)		389(227)	594(273)	180(69)	852(250)	64(18)	111(51)	214(135)	78(49)	110(56)	2592 (998)	1198	348(27)	28(4)	108(1)	484	32	169 110	33	39.7	40.0
Galliformes 2 species	~~2~~ (1)		1(1)	2(1)	1(1)	2(1)	2(1)	1(1)	2(1)	1(1)	2(1)	2(1)	1	2(1)	1(1)	—	2	1	2	1		
1 ext. indivs.	~~618~~ (617)		42(42)	180(173)	24(24)	322(258)	24(11)	13(13)	27(24)	10(10)	35(30)	677(587)	567	11(10)	1(1)	—	12	11	51	21	18.3	18.5
Anseriformes 3 species	2		1	2	2	2	1	1	1	1	3	3	0	1	—	1	1	0	0	0		
indivs.	30		2	7	7	7	1	2	4	2	4	36	0	5	—	2	7	0	0	0	0	
Charadriiformes, species?	~~19~~		3	2	—	12	2	—	2	—	8	16	0	6	2	1	7	0	3	0		
indivs.	58		4	2	—	79	3	—	4	—	20	112	0	8	2	1	11	0	3	0	1.5	1
Columbiformes 3 species	2		1	1	—	3(1)	2(1)	—	1(1)	—	1	3	1	1	—	—	1	0	2	0		
1 ext. indivs.	13		5	1	—	19(1)	3(1)	—	1(1)	—	3	32	3	1	—	—	1	0	3	0	1.5 to 2.5	1

	1931 census	Pit A	3	4	13	16	36	60	61-67	77	Acad	Total Plants.		Pit 10	28	37	Totals Recent		Pit A			
Cuculiformes	species 1	1	1	1	—	1	1	—	—	—	1	1	0	—	—	—	0	0	1	0		
	individuals 12		1	4	—	9	1	—	—	—	2	17	0	—	—	—	0	0	8	0	29	3
Strigiformes,	species 6		7 (1)	5 (1)	2	7 (1)	8 (1)	2	4 (1)	1	6 (1)	8	1	5	5	4	5	0	6	1		
1 ext	individuals 404		70 (2)	34 (2)	7	105 (5)	23 (1)	9	24 (2)	1	28 (1)	301	13	274	102	50	426	0	29	4	10.4%	10.5
Piciformes,	species 2		1	1	—	5	2	—	—	—	—	5	0	—	—	—	0	0	1	0		
	indivs. 20		1	1	—	18	3	—	—	—	—	23	0	—	—	—	0	0	5	0	7.8%	2
Passeriformes,	species ?,		6	5	4	15	10	2	2	2	4	17?	0?	6	5	3	7	0	15	2		
	indivs. 370		28	31	9	193	31	2	4	3	11	310	0?	124	25	12	161	0	59	9	18.5%	19.5
Total species	54+ (13)		53 (13)	50 (14)	33 (11)	87 (15)	50 (11)	28 (11)	42 (14)	24 (11)	65 (16)	109	(17)	52 (10)	28 (4)	17 (1)	57 (11)		52	13		
Total indivs.	4189 (1663) [193]		562 (273) (88)	887 (456) (33)	241 (95) (11)	1672 (597) (4)	164 (33) (3)	142 (67) (7)	294 (168) (42)	97 (4) (18)	286 (106) (6)	4344	(1878) (213)	782 (37) (1)	161 (6)	173 (1)	1116 (44) (1)		277	68 (2)		
% ext to Rec indivs	[153]		48.6% ④	51.4% ③	39.4% ⑥	34.4% ⑧	20.6 ⑤	47.2% ⑤	57.2% ②	62.9% ①	37.1% ⑦	42.3		4.7	3.7	.57	3.9		21.8			
			33 % ⑧	47.6 ①	34.8 ⑥	34.1 ⑦	18.3 ⑧	42.3 ④	42.9 ③	44.3 ②	35.0 ⑤	37.4		4.6 max Rec	3.7	.57 min Rec	3.8					
small & large raptors	349		(6) 29.2%	(3) 13.5%	(1) 9.5%	(5) 19.5%	59.7%	(4) 15.0%	(6) 29 %	(2) 11.3 %	(7) 36.2%											
% owls to total	13.39%													85.8%	93%	96.2%			59.7			
Overall Totals (Plants+Rec.	12.4		3.8	2.8	6.2	14.6	6.3	8.1	1.09%	10 %				35 %	63.3%	29 %						

Total Plants 5'3 & 42 02 (176 8)

Pit A: 1 0 / 8 0 / 29 3 / 1 0 / 6 1 / 29 4 10.4% 10.5 / 1 0 / 5 0 1.8% 2 / 15 2 / 59 9 18.5 / 12 4.3 4.5 / 52 13 / 277 68 (2)

Poor wall & Ruigplus

Total species 54+ (13)

Total indivs. 4189 (1663) [193]

% ext to Rec indivs [153] (extra parenthesis)

39.6% – g. amplus is # 9. amplus questionable to catg extinct

g. amplus is included in total # of extinct species & indivs.

small & large raptors 349

% owls to total 13.39%

Overall Totals (Plants+Rec. 12.4

species 113 (4 Rec not in Plants) (17) extinct

indivs. 4344 / 1116 / 5460

1835 extinct 44 g. amplus (1879) extinct – Grus 213 / 1666 g. amplus

34.4% extinct all pits Rec + Plants

30.5% " " " " " " minus g. amplus

151
130
175

88
102
144

added 4 quadrennia 7,23,62

7.21.62

Total all spp.	562	887	783	240	1674	161	168	173	142	294	99	288 9	313 (+60 fringillid = 373)	
Total non passer. indivs.	534	856	659	231	1481	134	137	161	140	290	96	278 8	224	Total
spp.	48	47	47	31	28	24	42	14	24	40	23	62	44	
	Pit 3	Pit 4	Pit 10	Pit 13	Pit 16	Pit 28	Pit 36	Pit 37	Pit 60	Pit 61-67	Pit 77	Pit Acad	Pit A	
Extinct indivs. (non passerine)														
Actual #	273	456	38	95	577	6	33	1	67	168	61	110 106	59	
% to total non pass.	51.1%	53.3	5.7	41.0	38.9 39.0	4.4	24.0	0.6	47.7	58.0	63.5	39.5 38.1	26.3	
# extinct sp.	13	14	11	11	15	4	11	1	11	14	11	16	11 (+2 pass)	
Total falconif. & Strigiform	459	628	622	187	957	131	87	156	120	238	79	138	143	394 5
Small vultures & Caracara	86	145	20	44	207	4	12	4	23	45	20	31	17	
+ Hawk falcon owls	134	85	534	18	187	121	52	151	18	69	9	50	85	
① Total small raptors	220	230	554	62	394	125	64	157	41	114	29	81	102	
② " eagles condors turkey Large Raptors	239	398	68	125	563	5	23	0	79	124	50	57	41	
% Large to total	52.1	63.4	10.9	66.9	58.7	3.8	26.4	0	65.7	52.2	63.3	41.3	28.6	
% raptors to total non pass.	86.1	73.3	94.5	77.8	64.5	81.4	63.5	96.3	85.7	82.1	82.3	49.7	62.7	
Wakebirds total	26	42	25	20	155	5	20	3	7	24	7	100 94	4	
% total to assemblage (including pass but not fringillids)	4.6	4.7	3.2	8.3	9.0	3.1	11.9	1.7	4.8	8.1	7.2	34.5 33.7	1.9	
% to non passer. assemb.	5.0	4.9	3.8	8.6	10.4	3.6	14.6	1.8	5.0	8.3	7.3	36.0 35.0	2.7	
% of non pass total assemblage (17 spp.)	71.2%	87.7%	24.4	90.0	74.1	11.1	40.8	27.3	92.3	69.0	91.7	37.4	42.1	
% of non pass total assemblage (13 spp.)	62.4	81.2	7.9	82.3	62.8	5.1	29.8	1.2	83.5	61.7	83.3	30.4 30.1	31.7	
% 4 common spp. to total non pass	8.6	6.5	16.5	7.8	11.0	5.8	10.8	26.6	8.5	7.2	8.3	6.8	10.7	

Marcus (op cit p. 10) has already pointed out the possibility of intermittent periods of activity of the various pits.

+ Howard (1960, p. 713)

As noted above, Marcus (op cit p. 10) referred to possible intermittent periods of activity of the separate pits. The present writer, also, recorded the occurrence of a layer of oxidized asphaltum + clay at the 15 ft level in Pit 3 that suggests a period of aquescence between the entrapment of the animals and in the lower beds + those in the upper, the latter having come from above this layer, at a depth of 12 ft. During the excav. of Pit 3 the deepest 4 ft contained small mammals + birds only fragmented bones of small mammals + birds were recorded in the hardened asphaltum in deepest 1 – 4 ft.; + the typical Pleisto assemblage of small mammals began below 4 ft.

Pits 3, 4, 61-67 were fairly close together, all were left open after excav. A recognition of activity in these pits is worthy of note. In developing the park, plans called for filling in these pits in order to establish the meadow, underground activity was such, however, that this was impossible. With two pits filled, the third resulted in an outbreak + two in one of the others. Today one pit appears in the Asphalt area, where an outbreak occurred. Pit 3 is not precisely located within the boundaries of any of the previous three. This area is suggestive of what could have occurred in the past over a longer period; as one pit perhaps hardened over, activity started up in another spot close by. The no. of pockets

	3	4	41-47	60	77	13	16	28	36	37	Acad?	10
Sesleg pit	Large	large	large	Large	Large	fair deep	small deep	small	small	small	Large?	moderate
# indiv.	562	887	294	142	97	240	1674	161	148	173	285	783
# " large apt.	117	56	70	14	24	17	18	1 ✓	4 ✓	— ✓	10	7

amplus ↑ Aq. ✓ ✓

✓	88/85	33/238	42/28	7/44	18/17	11/58	4/382	0/4	1/14	0/0	6/20	1/48
Terms	22	20	22	7	4	5	13				3	4
Brevip	7	3	6		2	1	1				1	—
	117	56	70	14	24	17	18				10	5

	3	37	4	28	1B	16	60	61-67	3B	77	Quad	10
Cecomia	2	–	8	–	2	10	3	4	1	2	3	1?
Parafalco	42	–	173	–	27	238	13	24	11	10	30	10
Cpuz	2	2	6	–	6	6	2	4	1	2	4	5
Bubo	6	–	21	1	6	59	8	3	2	1	6	7
Coraggps	38	–	61	–	18	25	9	18	1	14	8	3
Gymnogyps	88	–	33	–	11	4	7	42	3	18	6	1
Teratomis	22	–	20	1	5	13	7	22	1	4	3	6
Fgils	9	–	17	–	4	27	4	6	5	2	3	2
Guinella	8	–	30	–	3	35	4	7	–	3	7	4
Aquila	85	–	238	4	58	382	44	28	14	17	20	48
Haliaeetus	11	–	28	–	41	66	6	4	–	3	11	3
Neogyps	3	–	20	–	2	32	5	3	–	1	3	2
Neoph	15	–	40	–	10	36	5	12	2	3	10	4
	334	(2)	695	(6)	190	933	117	179	41	80	114	96
Totals	556		887		240	1674	142	294	165	97	285	783
	59.9%		78.3		79.1	55.7	82.3	60.9	(24.4)	82.5	40%	(12.3)

Area	Totals →		247 Pdr A	562 3	887 4	782 ✓ 10	241 13	1672 16	161 ✓ 28	164 36	173 ✓ 37	142 60	294 61 .67	97 77	286 Grad
% Pelecaniformes			0	0	0	0.28%	0	0	0	0	0	0	0	0	0
% Columbiformes			0	0	0	0	0	0.11%	0	0	0	0	0	0	0
% Ciconiiformes		X	0.37%	1.2%	0.9%	0.38%	0.83	0.71%	0.6%	1.2%	0	2.8%	4.7%	3.0%	4.2%
% Anseriformes		X	0.37	2.3	2.8	.76	4.5	3.5	1.2	5.48	0	.7	.68	2.0	21.3
% Falconiformes		X ✓	40.7	69.2	67.0	44.6	74.7	50.7	17.4	39.0	62.5	78.3	72.7	80.5	38.4
% Galliformes		X ✓	19.1	7.4	20.0	1.4	10.0	19.2	.6	14.6	0	9.1	9.2	10.3	12.4
% Gruiformes			9	.35	.77	.64	2.9	.41	0	.61	1.18	1.4	1.35	2.0	1.4
% Charadriiformes		X ✓	1.1	.70	.27	1.2	0	4.7	1.2	1.8	.37	0	1.35	0	7.0
% Columbiformes		✓	1.1	.89	.11	0	0	1.1	0	1.8	0	0	.34	0	1.0
% Cuculiformes		✓	3.0	.27	.54	0	0	.53	0	.61	0	0	0	0	.7
% Strigiformes		X ✓	10.9	12.4	3.8	35.1	2.9	6.2	63.5	14.0	28.9	6.3	8.25	1.0	9.8
% Piciformes		✓	1.8	1.27	.11	0	0	1.0	0	1.8	0	0	0	0	0
% Passeriformes		X ✓	21.3	4.9	3.4	15.8	3.7	11.5	15.5	18.3	6.9	1.4	1.35	1.0	3.8
			99.8	99.8	99.6	100.1	99.53	99.6	100.00	99.7	100.00	100.0	100.00	100.0	100.0

6.25
4
2.25

Total Teratorns, Condors.	117	56	7	17	18	1	4	0	14	70	24	10	3		
Large Eagles (omit Neophrontops)	122	342	61	108	545	4	19	0	65	54	26	47	38		
Total Large	239	398	68	125	563	5	23	0	79	124	50	57	41		
Small Vultures	58	105	17	29	63	1	6	5	15	32	18	19	3		
Neophrontops, Gypsos, Caracara	28	40	3	15	144	3	6	1	8	13	2	12	14		
													17		
Hawks, owls, falcons	134	85	534	18	187	121	52	151	18	69	9	50	81		
Total Small	220	230	554	62	394	125	64	157	41	114	29	81	98		
	(7)	(10)	(3)	(12)	(8)	(2)	(4)a	(1)	(11)	(6)	(9)	(5)	4b		
% Large (all)	52.2	63.4	10.9	67.9	58.7	3.8	26.4	0	65.6	52.2	63.4	41.0	29.5%	acad, 61-67, 3	
% [illegible]	[illegible]														
	(6)	(11)	(8)											13, 16, 60, 77	
% [illegible]												acad	PJA		
Pits	Pit 3	4	10	13	16	28	36	37	60	61-67	77				

Rancho 27
Talara 36
Orcutt 29

5 24.6 38.1
4.4 26.0
5.7

Acad 38.7
16 39.5
13 41.2
60 47.9
3 48.7
4 53.9
61-67 58.0
77 63.5

13) 442.0 (34.0
39
52
52

48.9
8) 391.4
32
71
64
74

Acad 58.7
3 47.9
61-67 47.8

16 41.3
7 36.7
4 36.4
60 34.3
13 33.1

8) 336.4 (42.05
32
16

8
9
9
12
14
15
18
19

8) 104 (13
8
24

17 spp. found in the Plants pits

7.21.62

	3	4	10	13	16	28	36	37	40	61-67	77	Acad	★
★ Ciconia	2	8	13	2	10	○	1	○	3	4	2	3	1
✓ Bathantes	2	4	10	1	2	1	3	5	1	2	1	1	1
★ Cenogyra	38	61	3	18	25	○	1	○	9	18	14	8	○
★ G. amplus	88	33	1	11	4	○	3	○	7	42	18	6	2
★ Geron	22	20	6	5	13	13	1	○	7	22	4	3	1
✓ B. jamaic.	6	8	49	1	17	2	3	4	1	3	3	2	6
✓ B. regalis	10	4	47	1	2	2	3	32	2	16	2	4	2
★ But. frag.	9	17	2	4	27	○	5	○	4	6	2	3	4
★ Spizaeb.	8	30	4	3	35	○	○	○	4	7	3	7	4
Aquila	85	238	4	58	382	4	14	○	44	28	17	20	22
Hal.	11	28	3	41	64	○	○	○	6	4	3	11	2
★ Neog.	3	20	2	2	32	○	○	○	5	3	1	3	3
★ Nephr.	18	40	4	10	36	○	2	○	5	12	3	10	2
★ ✓ Caracara	28	40	3	15	144	3	6	1	8	13	2	12	14
★ Parapan.	42	173	10	24	238	13	11	○	13	26	10	30	21
Aquscan (water)	2	6	5	6	6	○	1	2	2	4	2	4	1
Bubo	6	21	7	6	59	1	2	○	8	3	1	6	8
★ Zo of 4 to nonpass.													
Total 4	46	56	109	18	165	8	15	42	12	21	8	19	23
Total 13	334	695	52	190	933	7	41	2	117	179	80	84	71
Total 17	380	751	161	208	1098	15	56	44	129	200	88	103	94

+

7.4.62

| | | |

7.21.62

Age Criteria

	37	28	10	36	~~A~~ Acad	14	13	60	3	4	61-67	77
Index of extinct species: total nonpasserine assemblage	0.5	4.4	5.7	24.6	26	38.7	39.5	41.2	47.9	48.7	53.9 ×	58.0 ×	63.5 ×
Index of small raptors; total raptorial count	100.0 13	96.2 12	89.1 11	73.6 10	71.4 9	58.7 8	41.3 5	33.1 × 1	34.3 × 2	47.9 7	36.6 × 3	47.8 6	36.7 × 4
~~Strigiform index; nonpasserine total assemblage~~	~~31.1 29~~	~~75.0 64~~	~~41.6 35~~	~~16.7 14~~	~~13.1 10~~	~~10.2 10~~	~~7.0 6~~	~~3.0 3~~	~~6.4 6~~	~~13.1 12~~	~~3.9 4~~	~~8.2 8~~	~~1.0 1~~
Ratio of abundance of Cathartes aura & Coragyps occidentalis	5:0	1:0	3½:1	3:1	1:0	1:8	1:2½	1:18 ×	1:9	1:19 ×	1:15 ×	1:7	1:14 ×
Ratio Sturnella to Pica	0:0	14:0	76:1	1:15	1:3⅓	1:3	1:9	1:4	0:1	1:6	1:3⅔ ✓	0 ✓	1:0 ✓
% of 13 spp. ~~A~~ total nonpass. assem.	1.2	5.1	7.9	29.8	31.7	30.7	62.8	82.3 ×	83.5 ×	62.6 ✓	81.2 ×	61.7 ✓	83.3 ✓
% of the 17 constituting the A	95.5	53.0	67.7	26.7	24.4	18.4	15.1	8.6 ✓	9.3 ✓	12.0	7.4 ✓	10.5	9.1 ✓

OUT

16 extant sp. here
add new intend
" Pinto angelensis
" Gallinatonia

total non passerine 41 09 in Pleist pits

Los Angeles Museum Pits

Species	1	2	3	4	9	10	13	16	28	36	37	51	60	61	67	77	81	Total L.A.M. Pits	So. Cal. Acad. Sci. Excav. 285	Total L.A.M. + S.C.A. Pits
Podilymbus podiceps 1.								1										1	0	1
Colymbus sp. 2.																		1	0	1
Ardea herodias 3.			3			1		1					1	1	1	1		9	2	11
Casmerodius albus 4.									1						1			2	0	2
Egretta thula?																				
Florida caerulea 5.								1						1				2	3	5
Butorides virescens 6.														1				1	0	1
Nycticorax nycticorax 7.															1			1	0	1
Botaurus lentiginosus 8.			1			2				1?				1	1		1	7	1	8
Mycteria wetmorei 9.																		0	1	1
Mycteria americana? 10.																		0	1?	1
Ciconia maltha 11.		1	2	8		1?	2	10		1			3		2	2		30	3	33
Plegadis guarauna 12.															1			1	0	1
Ajaia ajaja? 13.																1		1	0	1
Cygnus columbianus 14.																	1?	1?	1	2?
Branta c. canadensis 15.			1	1				4												
B nigricans?			1					1												
Anser albifrons 16																				
Chen rossi? 17																				
total (some species min.) 18.	1		8	21		34	11	22		7			2	1		2	1	79	29	108
	1sp?			2			3	3										8	15	23

3 sps. 3 sps. 5 sps? 1 sp.? 5 sp.

Over 1000 indiv. from Pleist pits

Rec' Rec' Rec'

Corrected Pit 3 to eliminate specimens above the 1 ft. level (which may be Recent)

X = Recent

38
102
282
38?
133
163
603

Los Angeles Museum Pits

Species	1	2	3	4	9	10	13	16	28	36	37	51	60	61	67	77	81	Total L.A.M. Pits	So. Calif. Acad. Sci. excav.	Total L.A.M. + S.C.A. Pits
Anas platyrhynchos								14												
Chaulelasmus streperus?								3												
Marica americana?								1?												
Mallard or Pintail			2	1			1	14												
Nettion carolinense			2	3	1	(1)		12		1				1?						
Querquedula cyanoptera sp.							1	2												
Spatula clypeata						(1)														
Nyroca 2 sp.																				
Total Ducks			4	4	1	2	2	32	1	4				1				51	31	82
Cathartes aura		1	3	4		8	1	2	1	3	5	1	1	1	1	1	1	34	1	35
Coragyps occidentalis		5	41	61	1	3	18	25	0	1	0	0	9	8	2	8	14	196	8	204
Gymnogyps californianus	1	1	84	33		1	11	4		3			7	22	2	18	18	210	6	216
Coragyps clarki	1	1	7	3			1	1						3		3	2	22	1	23
Teratornis merriami	1	1	22	20		5	5	13	1?	1			7	11		11	4	102	3	105
Elanus leucurus			1			1				1								3	0	3
		4	31	8		84		4	6	12	21		1	2	1	1	6	178	3	181
Astur atricapillus								2										2	0	2
Accipiter velox			1	1		1		2										5	0	5
Accipiter cooperi			2 3	16 13	1	1		17 12					2		2			42 34	3	45 37
Buteo lineatus		1	31	8		84		4	6	12	21		1	2	1	1	6	178	31	181

202 150 70

← Los Angeles Museum Pits →

Species	1	2	3	4	9	10	13	16	28	36	37	51	60	P.D. 61	P.D. 67	77	81	Total L.A.M. Pits	So. Calif. Acad Sciences Excav.	Total L.A.M. + S.C.A. Pits
Buteo borealis 36		1	6	7	1	13	1	17	2	3	4	1	1	2	2	2	1	65	2	67
Buteo swainsoni 37		1	19	1		38	0	1	4	8	42	1	0	7	1	5	3	132	2	134
B. lagopus 38						4			1									5	1	6
B. regalis 39		1	10	3		43	1	2	2	2	31	2	1	9	6	1	1	117	4	121
B. species? 40				2			1	4					1			1		9	0	9
Aeturus munitus 41				4														4	2	6
Aquila chrysaetos 42	2	11	86	238	2	47	58	38	4	14			44	19	1	8	17	3	936	20	956
Falco peregrinus anatum 43			8	30		4	3	3					4	3	3	1	3	1	95	7	102
Falco mexicanus 44			1	2		9	2	3	1				1	1					21	2	23
Falco columbarius 45			2	1		2	1	3	1				1						11	0	11
Falco sparverius 46			3	8		7	4	24	1	2	2					1	1		3	
Falco species?																				
Pandion haliaetus 47			4	20	1	21	2	32					5	1	1	1	1	70	3	73
Haliaeetus leucocephalus 48	1	2	11	28		3	41	66					6	2		2	3		160	11	176
Neogyps errans 49			24	40		1	15	144	3	6	1		8	5	5	3	2	1	263	12	275
Gymnogyps amplerotus 50																				
Cathartes aura 51		6	18	40		3	10	36		2			5	6	3	3	3		139	10	149
Coragyps atratus 52																				
Vultur gryphus 53																				
Unidentified																		2205		

← Los Angeles Museum Pits →

species	1	2	3	4	9	10	13	16	28	36	37	51	60	61	67	77	81	Total L.A.M. Pits	So. Calif. Acad. Excav.	Total L.A.M. + S.C.A. Pits
Sphenty x				7		1 OK		84		13				1			2	108	5	113
Anaspano californicus	1		42	173	1	10	24	238	1	11			13	14	1	10		548	30	578
Gyrus canadensis			2	6		5 OK	6	6		1	2		2	2	1	2		36	4	40
Gyrus americana							1	1										2	0	2
Julica americana				1														1	0	1
Xyedius Kelletti					?	1 OK		14		1								17	2	19
Equatuola				1		1 OK												2	1	3
Copelli delicata			1					6							1			8	0	8
Numenius americanus						2		1			1	1		2	1			7	1	8
Phaeopus hudsonius			2	1		1 OK			1									5	1	6
Totanus melanoleucus								12		2								14	5	19
Limnodromus griseus								3										3	0	3
Limosa ?			1					1	1									3	0	3
Recurvirostra americana																		0	1	1
Sandalium Phalaropes								16		2								18	0	18
Shorebird sp. ?								1									1	2	8	10
Rissa ?																		0	1	1
Larus sp. ?						1 OK												1	0	1
Larus brachyrhynchus ?								1										1	0	1
Pelecinus ?								1										1	0	1
Cathartopluvus sericatalmatus			48	289		2		345												

149 50 102 100

← Los Angeles Museum Pits →

Species	1	2	3	4	9	10	13	16	28	36	37	51	60	P.O. 61	P.O. 67	P.O. 77	P.O. 81	Total L.A.M. Pits	So. Calif. Acad. Sci. Excav.	Total L.A.M. + S.C.A. Pits
Columba 64 fasciata				1				1							1			2	0	2
Ectopistes migratorius								1		1					1			3	0	3
Zenaidura macroura 68			5		1	10		17		2								26	3	29
Geococcyx 69 californianus			1	4				9		1		1						16	2	18
Tyto alba 70	1	1	28 31	3	1	99		2	22	9	14			12	4		4	204 196	8	212
Otus asio 71			1					5	2?	2	1						1		1	13
Bubo virginianus 72		1	6	21	1	4	6	59	1	2			8	1	2	1	1	114	6	120
Glaucidium gnoma 73			1?					1?		1								103?	0	103
Speotyto cunicularia			9 14	3		104		15	56	1	31							224	3	227
Strix occa 75			2	2				5		1				1	1		1	13	1	14
Asio 76			23 27	5	1	63 59	1	18	21	6	4	1	1	2	1		7	152	9	161
Cryptoglaux acadica 77																		1	0	1
Colaptes cafer 78				1				10		2										13
Asyndesmus lewis 79			1					5												6
Dryobates woodpecker 80																				1
Sphyrapicus varius 81								1			1 torso 12									
← Passerines →	3		13	34	2															
102 Oreoscoptes montanus																				
18 Corvus cryptoleucus																				
Xanthocephalus ?																				
Agelaius			90	40				1												

~~See next page where repeated~~

157

Los Angeles Museum Pto ⟶

Species	1	2	3	4	9	10	13	16	28	36	37	51	60	61 P.O.	67	77	81	Total L.A.M. Pto	So Cally Acad Sciences Exeav	Total L.A.M. + S.C.A. P.R.S.
81																				
Tyrannus OK								1										1	0	(1)
Otocoris 82 alpestris OK											1							1	0	(1)
Aphelocoma californica 83 OK					(1)			3		1								4	0	4
Pica nuttalli 84 OK		1	12	11		1 OK	4	91		15			1					136	6	142
Corvus 85 corax OK		1	11	(12) 13		(33) 26	(3) 2	(30) 13	5	3	6		1	(3)			(4)	75 35	2	77 37
Corvus 86 B. nerpens OK		2	1			(12) 11		(2)	(3)	X	X			1			(1)	8 5	1	8 6
Corvus 87 caurinus OK			(1)	(4) 2		10 OK	(1) 2	(23) 6	(1)	(3)							1	12		12
88																				
Penthestes Oreocaptes 89 montanus OK								(1)										(1)	0	(1)
Toxostoma rediviv. 90 OK								2		(1)								2	0	2
Turdus 91 migratorius OK								14		2								16	0	16
Sialia 92 sp. OK										2								2	0	2
Bombycilla 93 cedrorum										X										
Lanius 94 ludovicianus OK								1										1	0	1
Sturnella 95 neglecta OK			2+1?	3+1?	2	(76) 63+6?	1	10+2?	14	1	5	1				1	(13) 10	125	2	127
Agelaius 96 sp. Xanthocephalus or Euphagus OK				1?		1		9	2?	(2) 1								13	0	13
Euphagus 97 n. sp.																				
Ictenus 98 melothrus ater 99 OK								1										1	0	1
Sparrows ? 100 P + A (57)																				
Cyanocitta 101 stelleri OK			1															1	0	1
? sp. ?								1										1	0	1

21
204
223

living species – La Brea (indiv. count)

	1	2	3	4	9	10	13	16	28	34	37		60	61	67	77	81	Acad	La Brea	Pit A
Cormorants						2		1												
Grebes living																				
Ciconiiformes			4 / 5			3		2	1	1		1	1	4	2 4		1		2	
Anseriformes		1	12	25	1	6	13	54	1	11		2	2	2		2	2	45	13	1
Falconiformes Cathartidae		1	2 / 5	4		10	1	2	1	3	5	1	1	1	1	1	1	1	1	1
Hawks		4	57 / 62	38	2	225	3	49	15	27	99	26	6	20	6 15	6	12	15	18	24
Eagles	3	13	96 / 97	266	2	51	99	448	4	14	—	12	50	21	1 10	20	3	31	24	23
Falcons			7 / 8	16		36	8	33	4	2	3	4	2 / 59	2	2	1	2	7	7	30
Total Falconiformes			162	324			111	532						44	8 27	28		54	60	
Owls	1	2	8 / 68	32	3	274	7	100	102	22	50	36	9	15	7	1	13	27	39	24
Galliformes				7		1		84		36	—	—		1			2	5	4	30
Gruiformes			2	7		5	7	7		1	2	2	2	2	1	2		4	2	—
Charadriiformes			4	2		8		56	2	5	1			2	2	—	—	20	8	3
Columbiformes	—	—	5	1	1	1		18		2								3		3
Cuculiformes			1	4				9		1								2	1	8
Woodpeckers			1					1/6		2									2	
Total Nonpasseriformes	4	21	259 / 270 +18	397	9	622	138	863	130	125	160	84	73	90	11 41	33	36	160	119	147
Gymnogyps here	5	22	339 / 347	430		623	149	867		128			80	92	13 59	51		166	122	148

(2) = # of species, other # = # indivs.

Extinct species – La Brea (indivs, comm't)

	1	2	3	4	9	10	13	16	21	36	37	"Blis" 24 = P.B.?	60	61	67	77	81	Acad	La Hi	Py A
Grebes																				
Ciconiiformes (SB)		1	2(1)	8(1)			2(1)	10(1)		1(1)		2	3(1)	—	2(1)	2(1)		5(2)	2	1
Anseriformes		1		2(1)			3(1)	3(1)										15(1)	1	—
Falconiformes			38																	
Cathartidae small		5(1)	47(1)	61(1)	1	3(1)	18(1)	25(1)		1		2	9(1)	8	2	8(1)	14(1)	8(1)	4	—
" large	2(2)	2(2)	93(2)	36(2)		1	12(2)	5(2)		3(1)		5	2(1)	25(2)	2(1)	2(2)	20(2)	7(2)	4	1
Teratornithidae (1)		1	22	20		6	5	13	1?	1		3	7	11		11	4	3	1	1
Haliaeetus (1)				2			1	4				1	1				1		1	
Eagles		1	26 / 8(4)	76(5)	1	10(4)	9(3)	97(4)		5(1)		15	15(4)	15(4)	4	7(4)	6(3)	2(2)	16(5)	13	12
Vultures			46(2)																	
Polyborus/Meleagris	1	9(2)		80(2)		7(2)	25(2)	180(2)				6	13(2)	14	8	6(2)	5(2)	1	22(2)	13	16(2)
total falconid.			234 / 257	275			70	324					52	66	16	61	50		56	36	
Owls (1)			2	2				5		1				1	1			1	1	4
Galliformes	1		42	173	1	10	24	238	1	11		10	13	14	11	1	10	—	30	18	21
Gruiformes																				
Charadriiformes																				
Columbiformes (1)								1		1										
Total non-passerines	5	20	273 / 258 / 58	460	3	37	99	581	2	24		34	68	81	31	56 / 44	62	4	107	58	66
Gymnogyps not added to living	4	19	172 / 185	427		36	88	577		21			61	59	29	38 / 41	44		101	55	65
														22	2	18				

81
31
64
176
55
121

All counts by individuals represented (~~%~~) first # given is position in list from 1–16
Passerines, woodpeckers + poorwills not (#) = Actual ratio in %
included in totals

Sept. 1958

Most Rec. 1–4 Middle 5–9 Old 10–	Old (10) 10.2 2	Old (12) 11.7 3	Very Old (14) 13 4	Rec. (3) 2.7 10	Very Old (15) 13.2 13	Old (11) 10.4 16	Rec. (2) 2 28	Middle (5) 5.1 36	Most Recent (1) 1.4 37	Old (13) 12 60	Oldest (10) 10.2 61– 67	Oldest (16) 13.5 77	Rec? (4) 3.4 81	Mid (9) 9 Acad	Mid (8) 7.7 LA Hi	Mid. (6) 5.4 Pit A	Mid (7) 6.1 Pit B?
Ratio extinct species ÷ total individuals	11 (48)	12 (49)	13 (53)	3 (5.6)	10 (41)	9 (40)	2 (1.5)	5 (16)	1 (0)	11 (48)	14 (59)	15 (65)	4 (10)	9 (40)	8 (32)	7 (31)	6 (29)
Ratio extinct ÷ living Falconiformes	12 (50)	13 (56)	11 (46)	3 (7)	9 (38)	8 (37	2 (4)	5 (17)	1 (0)	11 (46)	12 (50)	14 (64)	4 (14)	12 (50)	10 (41)	6 (27)	7 (33)
Ratio large raptors condors, vultures, Eagles ÷ total Falconiformes	6 (47)	9 (58)	12 (67)	2 (19	13 (69)	11 (65)	3 (20)	5 (41)	1 (0)	14 (71)	6 (47)	10 (64)	3 (20)	8 (51)	7 (48)	4 (38)	9 (58)
Ratio hawks, falcons ÷ total Falconiformes	12 (11)	10 (19)	14 (8.5)	3 (74)	16 (6.6)	13 (10)	2 (76)	5 (51)	1 (91)	15 (81)	11 (16)	13 (10)	4 (58)	9 (20)	8 (30)	6 (50)	7 (47)
Ratio hawks owls, falcons ÷ total raptors	13 (15.2)	10 (32.7)	15 (13.5)	3 (85.8)	17 (10)	12 (19.8)	2 (93.3)	6 (68)	1 (96.8)	14 (15)	11 (22.6)	15 (11.3)	4 (73.6)	9 (36.2)	8 (51.1)	7 (60.2)	5 (66.3)
Ratio owls ÷ total raptors.	12 (4.8)	7 (14)	13 (39)	2 (41)	14 (29)	10 (7)	1 (77)	7 (14)	4 (31)	11 (6.3)	9 (10)	15 (1)	3 (32)	9 (10)	8 (13)	6 (18)	5 (30)
Ratio Cerapsis ÷ Cathartes	6	11	13	3	14	10	2	3	1	8	9	12	2	7	5	2	4
÷ total order →	(72)	(82)	(91)	(19)	(93)	(73)	(14)	(36)	(10)	(84)	(72)	(95)	(24)	(63)	(54)	(38)	(43)
Average order	10.2	11.7	13	2.7	13.2	10.4	2	5.1	1.4	12	10.2	13.5	3.4	9	7.7	5.4	6.1

Three of the 12 pits are obviously different in content of birds than the others (10, 28, 37)

Differences lie as follows:

	Range 9 pits	10	28	37
No. ext. indivs. %	45% – 18%	4.6%	3.1%	.57%
No. small raptors % (hawks, owls, falcons to total raptors)	36.2 – 9.7%	85.8%	93%	96.2%
% Meadowlark to other passerines	18% – 0%	61.7%	56%	41.6%
% owls to total raptors	25% – 1.2%	44%	78%	31% P+A 24%
% Cathartes to small raptors	5 – 75	84	100%	100%

Order of 9 pits according to no. ext. indivs. % meadowlark % owls @% small raptors

1	4 – 48%	① 13 – 9.7	① 60 0	① 77 – 1.2%
②	77 – 4.5%	② 77 – 11.3	② 61-67 0	2 13 – 3.7%
3	61-67 – 42.7	③ 4 – 13.5	③ 77 0	B 4 – 5%
4	60 – 42	④ 60 – 15.0	④ 36 3.3	4 60 – 7.5
5	16 – 3.8	⑤ 16 – 19.5	⑤ 16 5.2	5 16 – 10%
6	13 – 35.8	⑥ 61-67 – 28.9	⑥ 3 7.1	6 acad 12%
7	acad – 3.5	⑦ 3 – 29.1	⑦ 4 9.6	7 3 – 15%
8	3 – 3.3	⑧ acad – 36.2	⑧ 13 11.1	8 61-67 – 19
9	1+ – 24.5	9 P+A 37.2	⑨ acad 18.1	9 36 – 25%
10	9 36 – 18%	⑩ 36 – 39.3	10 P+A (0?)	

weasamples	Brewster	Anachmondo		mapus						cathartes %
x		3 – 7, 8, 7, 5		7 1/2	✓	6	77	(1 special)	① 3 – 5
✓	x ✓	4 – 1, 3, 3, 3	ann.	2	✓	2 ✓	4	(4 specials	② 13 – 5.2
	x ✓	13 – 6, 1, 2, 2			?	3 ✓	60	(1 special)	③ 4 – 6.1
	x ✓	16 – 5, 5, 5, 5		5	✓	5 x	16	(3 specials)	④ 77 – 6.4
		36. 9, 9, 9, 9		9		9	13	(2 specs,	5 16 – 7.4
		60 – 4, 4, 4, 4		4	✓	4 x	3	(2 specs.	6 60 – 10
	x	61-67 – 3, 6, 8, 7			?, ✓	6	61-67	(2 spec.)	7 61-67 10
	x	77 – 2, 2, 1, 4		2		2 ✓	acad	(4 specials)	8 acad 11
✓	x ✓	acad – 7, 8, 4, 8		7 1/2	✓	7	36	(no specials)	9 36 75

3	61-67	4	77	13	60	16	
1040	798	495	422	313	102	86	
11.5	81	67	51	32	25	16	
925	717	428	371	281	77	72	
pred. 8990	90%	86	87	90	75	83.7	mammal predators & trap layer extract
8:1	8:1	5:1	7:1	7:1	3:1	4:1	

main

3
61-67
77
13
40
16
60

birds

60
3, 61-67, 77, 28
16, 13, ~~grad~~
36

Species common to all Pleistocene pits (X = also Recent, ✓ = extinct)

15

✓ Ciconia maltha

X Geese of some kind

X Cathartes aura

X ✓ Coragyps occidentalis

X Gymnogyps amplus

X ✓ Teratornis merriami

X Bubo jamaicensis

X Bubo regalis

X ✓ Umbilitriga fagilis

X Aquila chrysaetos

X ✓ Neophrontops americanus

X ✓ Polyborus prelutosus

X ✓ Parapavo californicus

X Opus canadensis

X Bubo virginianus

Species common to all except #36, 28, 37, ~~10~~

✓ Spizaetus grinnelli

Haliaeetus leucocephalus

✓ Neogyps errans

Species present in 2 - 4 Pl. pits but not 10, 28, 36 or 37

Ardea caerulea 16, 61, acad.

Ciconia maltha

✓ Anabernicula 4, 13, 16, acad

✓ Breagyps clarki, 3, 4, 13, 16, 61, 77 acad

✓ Buteo, ~~sp~~, 4, 13, 16, 60, 77

✓ Wetmoregyps, 4, acad.

Opus americana 13, 16.

Totanus melanoleucus, 16, 36, 5

Columba fasciata, 4, 16

✓ ~~Echo~~ pistes 16, 36, 61

Geococcyx 3, 4, 16, 36, acad

Glaucidium gnoma 3, 16, 36

✓ Strix sp. 3, 4, 16, 36, 61, acad.

Order abundance (1st 10), (4 pits)

Aquila chrysaetos	886	(all)
Parapavo calif.	567	(all)
Polyborus prelutus	268	(all)
Gymnogyps amplus	212	(all)
Coragyps occident.	192	(all)
Haliaeetus leuco.	120	(all pl.)
Neophrontops	136	(all)
Bubo vig.	112	(all)
Sophrotyx calif.	110	(4, 16, 36, 61, acad)

Check Pit censuses for the following

Adjacent pits with same species

Which pits had most water

Ducks in 3, 4, 13, 16, 36, 61-67 and Acad (none in 60 or 77) 10 → 5

sp. of Shorebirds 3 → 3 4 → 4 0 (10) → 2 2 → 2 (8) " " " " " "

Adjacent pits

(3), 4, 61-67

10, 77, 60

16

17 and Acad

28

Species not represented in 28, 37 or 10 but abundant in Pleis

Cicuta maltra 9 Pleisto pits (88 in data)

Anabaenida 4 " " (23 ")

Bragyps 2 " " (21 ")

Bubo sp 5 " " (9 ")

Quercus 5 " " (17 ")

Stipa brea 6 " " (13 ")

No. of sp. The same in 60 + 77 (19) out of 60 total 26 77 23 + 8 of 88 pits 30

4 + 61-67 27

36 (52 total) 7-19

Total extinct sp. birds from La Brea 20 from La M. asphalt 18
" all sp " " " " " 128 " " " 120

Incidents of Charitonius in overall totals of percentages & Ratios sp's not included as extinct

	1930 overall census	Pit 3	4	13	16	36	60	61-67	77	asphalt	Pit A	10	28	37	Totals overall as of this study Points	Rec.
No. of species ✓	54+	50	47	32	75	43	28	43	24	57	55	52	28	17		
No. of Individ. ✓	4189	560	889	246	1645	161	143	294	97	285	274	787	160	173	with Pit A 4595	1115
No. extinct sp. ✓	× 13	12✓	14✓	11 12	14✓	9✓	10✓	13✓	10✓	15 17	14	9 10	3✓	1✓	18	with Pit A 9
No " individ. ✓	1472	185 272	427 460	88 99	573 577	29	61 68	124 168	44 62	100 105	67	36 38	5✓	.1✓	1754	with Pit A 42
% Colymbiformes (12)	.02	—	—	—	.01	—	—	—	—	—		—	—	—		
% Ciconiiformes (6)	.93	1.0%	.90	.81	.72	1.2	.27	4.7	3.0	(1) 4.2		.35	—	—	3321 (- Pit A	
% Anseriformes (5)	2.3	2.1	3,0	4.6	(4) 3,4	6.9	1.4	.65	2.0	(2) 21.3		.71	.62	—	1687 (ex - Pit A)	
% Falconiformes (1)	60.0	(1) 69.0	(1) 66.0	73.	(1) 51.0	39.	77.	72.0	80.0	(1) 38		44.0	17.0	62.0	16 (- Pit A)	
% Galliformes (2)	14.7	(3) 7.5	20.0	9.7	(2) 19.0	14.	9.0	9.1	10.	(3) 12.		1.5	.62	—		
% Gruiformes (7)	0.71	0.4	.7	2.8	.4	.6	1.4	1.3	2.0	1.4		3.1	1.2	—		
% Charadr. (11)	1.3	.75	.23	—	(5) 3.6	1.8	—	1.3	—	(5) 7.0		1.0	1.2	.5		
% Columbi (9)	0.31															
% Cuculi. (10)	0.28															
% Strigiformes (3)	9.6	✓ 12.5	3.8	2.8	(1) 7.2	13.1	6.3	8.1	1.0	(4) 10.0	10.0	35.4	63.7	28.8		
% Piciformes (8)	1.47															
% Passeri (4)	8.8	(4) 5.0	3.5	2.6	(3) 11.0	18.6	1.4	1.3	1.0	3.8	23+	20.6	15.0	7.0		
% extinct ✓	35%	38 48	48 90 510	35.8 40	34 35	18.	42.	42.7 54.	45 64.	35 37	24.5	4.6 4.8	3.1✓	.57✓	38%	3.7%
% waterbirds ✓	5.3	4.2	4.9	10%	8.0	10.5	5.6	8.1	7.2	33.0	1.7	3.9%	2.4	1.7	8%	2.7%
Total non raptores		101	261	58	688					148						
Total of waterbirds ✓		24✓	43 25	25✓	133✓	17✓	8✓	24✓	7✓	97✓	5					
% waterbirds non raptors				43%	19%					65%						
% extinct predators																

	3	4	13	14	36	60	61	77	Quad	Total	old 1930 census
										2	1
Collumb.	—		—	2					61	178	98
Auseri	13	25	11	54	9	1	2	2	20	112	58
				79	3		4	—	81	292	157
Charad	4	2		135	12	1	6				
	17		11								
Tubic	—	1							12	64	39
		28			2	4	14	3	4	36	30
Acanth	7	8	2	12						292	226
				7	1	2	4	2	107		
Grues	2	6	7								
	26	42	20	154	15	7	24	7			
water % of total	3.8%	3.1	4.5	8.0	7.3	.7	2.0	2.1	28%	6.7	3.7
water birds + cranes % of total	4.6%	4.7	8.3	9.2	9.1	4.9	8.1	7.2	37.4	9.9	5.3

M
Rails

5.3.62

40 Species present in six of twelve pits

5 " " " all pits

12 " " " " Pleisto pits

" " " 5 " "

	Pits not represented
Ardea herodias	4, 13, , 36, , 37, 77, , 28, 37
Botaurus lentiginosus	4, 13, , 60, , 77 28,37
Ciconia maltha	10, 28, 37
Cathartes aura ALL	
Coragyps occidentalis	28,37
Gymnogyps amplus	28,37
Breagyps clarki	36, 60 10, 28, 37
Teratornis merriami	37
Accipiter cooperi	13, 36, 77 28, 37
Buteo jamaicensis ALL	
Buteo swainsoni	13, 60
Buteo regalis ALL	
Circus cyaneus	13 77
Buteogallus fragilis	28, 37
Morphnus woodwardi	13 36 77 28,37
Aquila chrysaetos ALL	
Spizaetus grinnelli	36 28, 37
Haliaetus leucocephalus	36 28, 37
Neogyps errans	36 28, 37
Neophrontops americanus	28, 37
Polyborus prelutosus ALL	
Falco mexicanus	36 77 37
Falco peregrinus	4, 36 60 77
Falco columbarius	36 61 77 Ac 37
Falco sparverius	60 61
Lophortyx californicus	3, 13 60 77 28, 37
Parapavo californicus	37
Grus canadensis	28
Tyto alba	13 60 77
Otus asio	4,13 60 61 77 10
Bubo virginianus	37
Speotyto cunicularia	13 60 61 77
Speotyto cunicularia	13 60 61 77
Strix brea	13 60 77 10, 28, 37
Asio	77
Pica nuttalli	61 77 28, 37
Corvus corax	77
Corvus brachyrhynchus	4,13, 36, 60 77 37
Corvus caurinus	60 61 77Acl0 37
Sturnella neglecta	60,61

40 sp.

Geococcyx 13 60,61 77 10,28 37

Geese 28, 37

Ducks 60 77 37

only 2 sp. Shorebirds in another 3 pits

Capella gallinago

Numenius phaeopus

Total Condors + Turkey Vultures + Eagles	257	434	72	135	599	5	25	0	84	136	53	67	41
" Hawks, falcons + owls	134	85	534	18	187	121	52	151	18	69	9	50	
Combined total	391	519	606	153	786	126	77	151	102	205	62	117	
	Pit 3	Pit 4	Pit 10	Pit 13	Pit 16	Pit 28	Pit 36	Pit 37	Pit 60	Pit 61–67	Pit 77	Acad Pit	
% Individ. Condors, Teratorais + Eagles	65.7	83.7	11.8	88.3	76.2	3.9	32.5	0	82.4	66.3	85.5	57.3	} fig. 3
% Individ. Hawks, Falcons + owls	34.3	16.3	88.2	11.7	23.8	96.1	67.5	100	17.6	33.7	14.5	42.7	} fig. 3
	(6)	(10)	(3)	(12)	(8)	(2)	(4)	(1)	(9)	(7)	(11)	(5)	← place in order according to nos. in table
Total raptores	459	628	622	187	957	131	87	156	120	238	79	138	
% of The Condors etc + Hawks etc. to total raptores	85.3	82.7	97.5	82.0	82.3	96.3	88.5	96.7	85.1	86.7	78.5	84.9	

16, 60, 4, 77, 13

PJA

# spec. of Aquatic Arthropods	0	7	46	39	77	69	171	330	917	681	182	76	112
Totals minus waterbirds + passerines (~~Anthomyiidae~~)	128	131	634	117	178	218	266	508	1326	814	211	89	133
% of # critical sp. (omit Ciconiiformes + non pass - non waterbird assemblage	0	5.3	7.2	33.3	43.3	31.6	64.3	65.5	69.1	83.7 (100.0) 103	86.3 4	85.3 3	84.3 2
among crit sp. large rapt.	0	5	22	25	53	38	112	231	542	386	124	48	77
small "	0	1	14	5	24	10	33	62	120	122	34	18	22
% small rapt. of all rep by 13				17.8 ✓	31.1	20.8	22.7	24.8	18.1 ✓	21	21.5	27.2	24.4
Extinct among ths 13	0	2	33	24	73	38	140	240	418	402	79	57	57
% " " " "	0	28.6	64.0	52.4	87.0	53.5	77.7	71.6	45	57.8	41.5	71.3	48.2

Table IV

Pit arranged in order of size of assemblage

		Pit 77		61-67		P.4	P.4	P.3	R.13	Pit 60	R.10	Pit 13		Pit 61-67		Pit 16		
		Pit 3		Pit 4		Pit 13	Pit 61-67	Pit 16	Road Pit	Pit 60	Pit 13	Pit 61-67	Pit 60	Pit		Pit 77		
Percentage of individuals of extinct species, to total assemblage	34.4	62.8	51.4	57.1	48.5	51.4	57.1	48.5	37.1	47.2	39.5	39.5	47.2	37.1	62.8	34.4		
(90) "typical" sp		82		61		78		59		82		79		40		56		
Percentage of individuals of small raptores to total raptore count	19.5	11.3	13.5	29.0	29.0	13.5	29.0	29.0	36.2	15.0	9.5	9.5	15.0	36.2	11.3	19.5		
Percentage of strigiform individuals to total assemblage	6.2	1.3	3.8	8.1	12.4	3.8	8.1	12.4	9.9	6.3	2.8	2.8	6.3	9.9	1.3	6.2		
Ratio of abundance of Sturnella neglecta to Pica nuttallii	1:9	1:14	1:4	1:9	1:6	1:15	0	1:19	1:3	1:9	1:18	1:18	0:1	1:8	1:0	1:12		
Ratio of abundance of Cathartes aura to Coragyps occidentalis	1:12	1:15,25 amplus	1:19 amplus	1:9 amplus	1:8 amplus	1:9 amplus	1:8 aquila	1:8 aquila	1:8 aquila	1:9 aquila	1:8 amplus	1:9 amplus	1:9 amplus	1:8 amplus	1:0 amplus	1:12 amplus		
Dominant species	Aquila chrysaetos	Aquila	g. amplus	g. amplus	Parapavo	Aquila	Aquila	Aquila	g. amplus									

Table ~~III~~

Criteria of Age

	Recent			?	Pleistocene
	Pit 10	Pit 28	Pit 37	Pit 36	Other 8 pits
Percent of extinct individuals	4.7	3.7	0.57	20.6	34.4 - 62.1
Percent of small raptores relative to total raptore count	85.8	93.0	96.2	59.7	36.2 - 11.3
Percent of owls to total assemblage	35.0	63.3	29.0	14.6	12.0 - 1.0
Percent of individuals of Sturnella relative to total passerine count	61.3	56.0	41.6	3.0	5.0 - 10.0
Ratio of Cathartes aura to Coragyps occidentalis	10/3	1/0	5/0	3/0	1/8 - 1/19
Dominant species	Speotyto cunicularia	S. cunicularia	Buteo swainsoni	Pica nuttallii	Aquila chrysaetos, Gymnogyps amplus, Parapavo californicus.

check list of passerines sent Miller for PX 77's

$$
\begin{array}{r}
.05 \\
193\overline{)10.00} \\
965 \\
\hline
350
\end{array}
$$

$$
\begin{array}{r}
107.1 \\
28\overline{)2.00} \\
196 \\
\hline
40
\end{array}
$$

$$
\begin{array}{r}
107.3 \\
41\overline{)3.00} \\
287 \\
\hline
130
\end{array}
$$

$$
\begin{array}{r}
.1 \\
9\overline{)1.0} \\
9 \\
\hline
10
\end{array}
$$

$$
\begin{array}{r}
.18 \\
11\overline{)2.0} \\
11 \\
\hline
90 \\
88 \\
\hline
2
\end{array}
$$

former 1930 census	% Water lobed 5,2,62 5,3%	% raptors to total 69.6	% chicks % owls 9.6	% Galliformes 14.7	No. species	Total # spec.	Total indivs	Most abundant species	Total indivs nonpass.	% extinct known passers	% adult to total adult 35%	% small (hawks, owls) raptors of total raptors	% falconiforms of total raptors 60.0	% woodpeckers Passerines to total 9.0%	Size of P.T. Depth	Diameter (Breadth)
						4200		Aquila 880 (20%)								
3	4.6	2.8%	82	12.5	7.5 min alt	12	3	559 Gymnogyps 88 (15.7%) Aquila 85 (15.2%)	531	35%	33%	29.2%	70.1%	3.2%	26' deep	15' x 15'
4	4.7	4.9%	70 nearest owls	3.8	22.6 max	14	4	888 Aquila 238 (26.8%) Parabuteo 173 (19.4%)	857	49.5%	47.8 max	13.5%	67.0%	3.6%	25' deep	24' x 18'
13	8.3	10.1	76	2.8	10%	12	13	246 Aquila 58 (23.6%) Heliaeetus 41 (16.6%)	237	38%	35.7 min 2nd	9.5% min	73.1%	3.5%	21' deep	9' x 9'
16	9.2	9.7	57	6.3	19.3	14	16	1661 Aquila 382 (23%) Parabuteo 238 (13.7%)	1456	39%	34.5	19.5%	51.2% most water birds	12.3%	27' deep	4 bays? circular; vertical walls 4 floors at 6ft
60	4.9	5.6 nearest owls	82	6.3	9.0	10	60	143 Aquila 44 (30.8%) Parabuteo 13 (9%)	141	42.5%	41.9	15%	77.6%	1.4%	15½' deep	12' x 15'
61-67	8.1	8.1	80	8.1	9.1	13	61-67	294 Gymnogyps 42 (14.2%) Aquila 28 (9.5%) Parabuteo 26	290	43%	42.9	29%	72.7%	1.3%	20' deep	wide spread
77	7.2	7.2	81	1.0% min	10.3	10	77	97 Gymnogyps 18 (18.5%) Aquila 17 (17.5%)	96	45%	44.3	11.3% min	80.4% max	1.0% min	20½' deep	10' x 12'
cecal	37.4	33.8 max	50	0.0% nearest owls	12.2	15	Cecal	286 Parabuteo 30 (10.4%) Aquila 20 (7%)	275	37%	35.6 nearest	36.2%	38.4% most water birds	3.8%	20' (?)	?
A		1.8 min #1	48 min.	10%	18.3	13	A	278 Sophiaetus 30 (10.8%)	205	28%	27%	59.7%	38.1% most passerines	28.0% max	no record?	?
34	9.1	10.5%	54	14.2	14.9 nearest owls	9	34	161 Pica nuttalli 15 (9.3%) Aquila 14 (8.7%) Sophiaetus 13	131	21%	17%	59.7%	39.7% most owls	22.3%	11' deep	2' x 4' ?
10	3.0	2.9	94	35.1%	1.4	10 (9)	10	781 Sheetoto 104 (13.3%) Tyto 100 (12.8%) Otus 84	658	5.6%	4.7%	85.8%	43.4% owls	15.7%	13½' deep	at least 12' deep chimney only
28	3.1	2.5	96 max	63.6% max	0.6	3	28	160 Sheetoto 56 (35%) Tyto 22 (13.7%) Otus 21	135	3%	2.5%	93%	17.5% min. (63% owls)	15.6%	8' deep	4' x 7'
37	1.7	1.8 min #2	91	29.4%	0 min.	1	37	173 Buteo swainsoni 42 (24%) Sheetoto 31 (17.9%)	161	0.6%	0.6% min	96.2% max	67.0%	6.9%	8' deep	chimney only
						17							none at coverage	none at coverage		

5727 total

12) 507

42

ones have been altered slightly since Fitch chart [H 5,2,62]

	Pts 3	4	10	13	16	28	36	37	60	66	77	Acad	A
Corvus Corax		tarsus 12	pectd 33	tarsus 3	26								

Revised Sheet

Species Total
23 25
21 22
12 12
17 17

Depths of Pits
2½' 25" 21' 27' 11' 15½' 20' 20½' 20' | 13½' 8½' 8'

Families and Orders

												Pit 10	Pit 28	Pit 37
	15 16	no. of spp. per pit	50	47	32	45	43	28	43	24	57	524 sp.	28 sp.	17 sp.
	16 23	205 +33	531 28	857 +36	237 9	1456 -58	1314 -36	142 -43	290 -44	96 -17	227 -58	658 +123	135 +25	37 +12
	14 15	238	559	893	246	1398	1278	99	246	79	169	781	160	49
	total 120 no. spp. 130	Pit	1	36	5	117	36	43				782	160	49
			560	929	241	1515	1314	142						
			562	887		1672	1642							

Grand Total

Colymbiformes						1						1	0	0
Ciconiiformes	1	6	8	2	12	2	4	14	3	12	64	36	1	0
Ardeidae		54			2	1	1	9		6	23	3	1	
Ciconiidae + Phoen.	1	2	8	2	10	1	3	5	3	6	38			
Anseriformes	1	12	27	16	57	11	2	2	2	6	190	6	2	0
Falconiformes	106	389	594	180	852	64	111	214	78	110	2598	348	28	108
Cathartidae	2	135	101	31	32	7	17	68	35	16	442	14	1	5
Accipitridae	59	197	422	121	630	45	77	107	36	72	1710	298	19	99
Falconidae	44	35	51	23	177	8	10	17	3	19	343	39	7	4
Teratornithidae	1	12	20	5	13	1	7	22	4	3	97	6	1	0
Galliformes	51	42	180	24	322	24	13	27	10	35	677	11	1	0
Phasianidae	30		7		84	13		1		5	110	1	0	0
Meleagridae	21	42	173	24	238	11	13	26	10	30	567	10	1	
Gruiformes	—	2		7	7	1	2	4	2	4	36	5	0	2
Gruidae	—	2	6	7	7	1	2	4	2	4	35	5	0	2
Rallidae	—		1								1			
Charadriiformes	3	4	2		79	3		4		20	89	8	2	1
Columbiformes	3	5	1		19	3		1		3	32	0	0	0
Cuculiformes	8	1	4		9	1				2	17	0	0	0
Strigiformes	28	70	34	7	105	23	9	24	1	28	300	274	10	5
Passeriformes	5	28	31	9	188	30	2	4	1	11	304	123	25	12
Pteridae			1		17	3						0	0	0

Phalacrocorax

Revised see p. 3, 2, 6 of Sheet

Depth of pits: 26½' 35" 21' 27' 11' 0' 15½' 20' 20½ by 20'

Families and Orders

| | 15 | 16 | | |

	need	extinct	introduced/reintroduced
Passerines	37	3	2
Woodpeckers	3	—	1
Pigeons	3	1	—
Grebes	2	—	—
Diving ducks	2	—	—
Surface ducks	5	—	—
Swans	1	—	—
Geese	5	1	—
Coot	1	—	—
Cranes	2	—	—
Shorebirds	11	—	1
Herons, Ibises, &c	11	2	1 —
Galliformes	30	11	6 —
Roadrunner	1	—	—
Owls	9	1	1 —
Galliformes	2	1	1 —
	125		4

69170 - 9179 omitted set pull #s

F8396

F8575

F9106

omitted
over

G 252-269
271-295
G 5063-87
5089 - 5112
5114 - 23
G 5195

G 8835-42
44-8937
Hun 9315
A 3232-3383
Hun #3606
H 4960-5246
Hun 5269
H 5459-74

F 2439-62

F 1791-94
1796-97
1799
1801-17
1819-23
1825-37
1907-08
3819-40
4237-40
4243
4252-54
5764-71
5817-36
6116-19
6121-23
8157-72
8307-28
8330-53
8355-60
8396
F 8416
8418
8425-29

F 8439
F 8441-42
8444
8448
8493-99
8516-22
8548-51
8553-54
8573-79
8908-13
8942-49
8970-78
8984-99
9001-21
9092-94
9100-06
9115-25
9128-32

Columbiformes 0.1 %
Ciconiiformes 0.9 %
Ardeidae
Ciconidae
Threskiornithidae
Anseriformes 2.35 %
Falconiformes 60.3 %
Cathartidae
Teratornithidae
Accipitridae
Falconidae
Galliformes 14.8 %
Perdicidae
Meleagridae
Gruiformes 0.7 %
Gruidae
Charadriiformes 1.4 %
Columbiformes 0.3 %
Columbidae
Cuculiformes 0.3 %
Cuculidae
Strigiformes 9.6 %
Tytonidae
Strigidae
Piciformes 0.4 %
Passeriformes 8.8 %
Corvidae
Others

0.1
1.0
2.0
60.0
14.5
0.7
1.5
0.3
0.3
9.5
0.4
8.5
99.4

2.35
1.4
.1
3.85

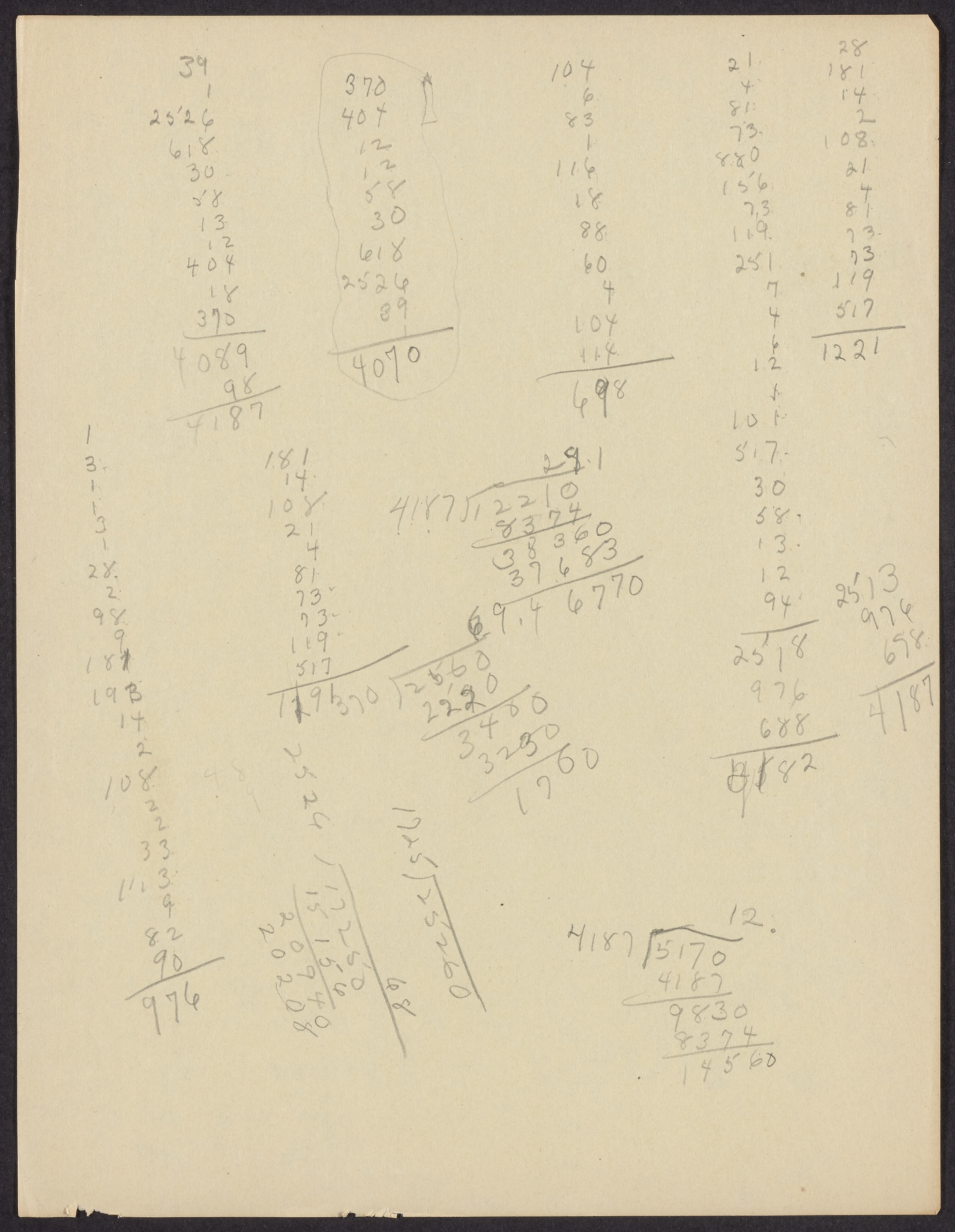
0.9
2.35
1.4
5.35

0.9
7
1.6

60.3
9.65
69.95

60.3
14.8
.3
.3
9.65
0.4
8.8
94.55
3.45
100

2.35
40
2.75



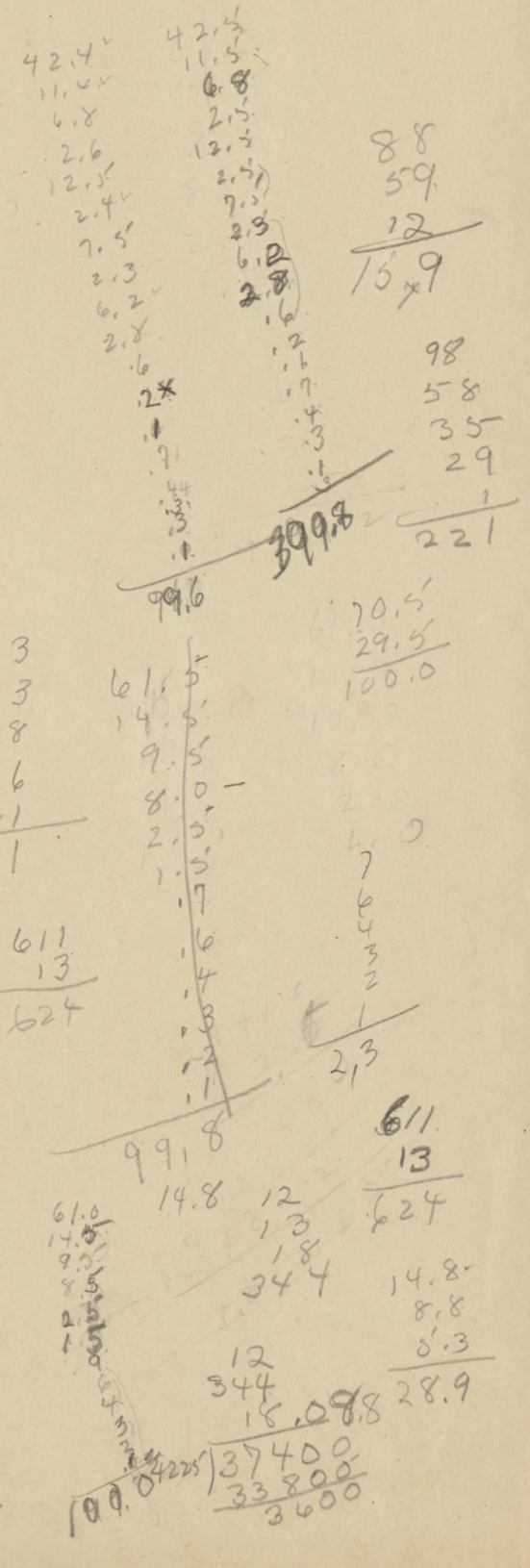
Falconiformes	2578	61.0%		
42.4 Accipitridae	1727	(67.0%)	40.8	
11.4 Cathartidae	465	(18.0%)	11.0	
6.8 Falconidae	280	(10.8%)	6.6	
2.6 Teratornithidae	106	(4.1%)	2.5	
Galliformes	611	14.5%		
12.5 Meleagridae	510	(83.4%)	12.0	
2.4 Perdicidae	101	(16.5%)	2.3	
Strigiformes	403	9.5%		
7.6 Strigidae	309	(76.6%)	7.0	
2.3 Tytonidae	94	(23.3%)	2.0	
Passeriformes	344	8.1%		
6.2 Corvidae	255	(74.1%)	6.0	
2.8 Others	1.84	(25.8%)	2.6	
Anseriformes	98	2.3%		
Charadriiformes	58	1.3%		
Ciconiiformes	35	0.8%		
0.61 Ciconiidae	25	(71.4%)	0.5	
0.18 Ardeidae	8	22.8%	0.1	
0.04 Threskiornithidae	2	5.7%		
Gruiformes	29	0.6%		
0.7 Gruidae	29			
0.4 Piciformes (Picidae)	18	(one family)	0.4%	
0.3 Columbiformes	13	0.3%		
Columbidae	13			
0.2 Cuculiformes	12	0.2%		
Strigiformes				
.02 Caliginiformes	1	0.02%		

5.5/8 = 25%

3 1/32 = 12 1/2 %

1 2/8 = 5%

2/8 = 1%



3.77
5.67
5.24
14.87
29.05

,037
4225) 15900
12675
3225

5.2
4225) 22100
21125
975

114
104
4
222

18.056
4225) 24000
21125
2875

14.5
4225) 62250
4225
20150
17900
2250

Work sheets

beyond this

page

227886
17.94
226 0.82

5'58
300 17,94
9,36

~~A Census of the Non-~~ ~~Digest~~

~~of the~~ Digest

3, 4
13, 16
61-67
acad

Separate fit Censuses of The Non-pa
Plants Rid y R L B

Young Birds

Veratrum - none
Condor - none? - some that show slight indication
Cathartista - fairly young - many specimens
Polyborons - many fairly young - & without proximal but dist. fused.
Neogyps - none
Neophrontops - several, fairly young
G. fragilis - 3 individuals, fairly young
G. grinnelli - none
M. woodwardi - none
Daliaëtus - one? (possibly only weathered)

tibia D6797 - C6741
tarsus D8390 - C8577
femur B9958 - C3268
ulna C7705 - C8970 and C2995
radius D8239 - C1528 + H7375 - C9609
carpo C8411, C4191
pelvis B8570
sternum C9911
scapo D4414 - C1569
coracoid C3298 - C5467
furcula D6522 completo
clavicula C2053
costilla D4615
mandibula C694 completa

To Alden Miller - Mus. Vert. Zool. Berkeley

Aug. 30, 1935

15 ~~modern goose skeletons~~ rec'd Dec 5, 1934

Misc. woodpecker & passerine bones from La Brea

P.t. 10 Passerine 13 humeri, 10 carpi, 7 ulnae, 16 tarsi.

26 tibiae, 3 femur, 1 scap., 1 mand., 1 cra.

Woodpeckers See attached sheet

acad. tarsi + humeri Ravens crow

P210 not filled yet

F3519-21 F2286
3525-26 2443-49
3532-38 2514
3545 2525
4238 2643
4252
8907

humeri 9809-9904 (sinistr)

6946, 7210 humeri

89, Ravens 4988-5039 + tarsi 129

crow 5098-5115 OK + tarsi 5113

Jay tarsi 5171, 5174, 5181

tarsi 5396, 5398, 5405, 5410

tarsi 5489-90 OK

" 5589?

" 5678 blackbird

" 5680 sparrow

tarsi 5686-87

ulna carpus Raven

carpus TI 3357-61 Sturnella

" 3366-71 "

" 3604 "

6778, 6785

scap 6857

8258

8291, 92-98 OK

8310-12, 8314

rad? 8366 Mammal?

8433

rad 8514

Js 5380; 5382-83, 85-88 cowbird

Raven K 3532 + tarsus

R. Q. r? tarsi K 3746 (19) Raven

tarsi K 3962 94, 97, 99

tarsus K 3880

cactus 3970, 3981 Raven

4160 + tarsus

Young birds

Quail – several without prox. end.
Dowitcher (Macroramphus) 1 out of 5 without prox. end and distal end not fully fused G 7913 case XV, 10
Crane – none
Curlew – none
Heron – none
Bittern – none
Egret – none
Duck – several without prox. ends (also humeri)
Circus – a few, fairly yg.
Buteo – humeri
Roadrunner – several fairly yg., 1 without prox. end, also 2 very yg. humeri.
Gnus – ~~several~~ a few fairly yg. – two yg tibiae (1 very yg.)

Not located

PU 10
E2286
~~E8407~~ not in the British Museum
G210 humerus
G4989, G4994 Raven tarsi?
G5113 Crow "
G5171, 5174, 5181 Jay "
G5396, 5398, 5405, 5410 "
~~G5584~~ ✓
G5678 ~~G5680~~, G5686-~~87~~ - tarsi
~~H 3356-3361~~ ✓ caripus Stuirnella?
~~H 3366-3374~~ ✓ " "
~~H 3604~~ ✓ " "
H 8366 rad (mammal?)
H 8514 radius
J 5782-83, 5785-86 - crow femurs?
K 4160

Read:

K 3187-89 - tarsi or humeri
K 3263 ~~-67~~ - ulna? ~~Corvus~~ Raven

MEMORANDUM

TO : _____

FROM : _____

DATE : _____

_____ FOR INFORMATION

_____ ATTENTION

_____ REPLY

_____ RETURN

_____

_____

_____

_____

B

7936 -61
6359 -77
2222 -3 caved
4775' -4
2785' -3 (9')
1957 -3 (7-8')
3319 -3 (caved)
1468' -2 (8-9')
6673 -67 (D8)
6740 -60 (C13)
5203' -4
~~4180'~~
7023 -67 caved
2077 -3 (no data)
1532 -3 caved
6369 -77
2044 -3 (no data)
6652 -67 (G12)
7250 -67 (SE cor 16-19')
4401 -4
2393 -3 (15-18')
2332 -3 (9½')
2722 -3 (18')
6410 -77
4271 -4
6651 -61 (B10)
1664 -3 caved)
8019 -77
3018 -3 (10')
3210 -3 (19')
2760 -3 (9')
7942 -61 (B13
3260 -3 caved)
4374 -3 (8')
1694 -3 (21½')
6909 -67 caved
7016 -67 caved
4206 -3 (13½')
5871 -13
2649 -16 (3-6')
5847 -13
3076 -3 no data

B

7923 -61 (A8)
4956 -4
3295' -3 caved
4981' -4
I078 -67 (F6)
4535' -4
8090 no data
6675' -67
4867 -4
6023' -13
6954 -61 (I19)
2797 -3 (10½')
4514 -4
7033 -67 caved)
8089 -no data
1966 -3 (7-8')
7522 -61 caved
1605' -3 (4')
6293 -77
7495' -61 (D-14)
7305' -67 caved
4915' -4
4774 -4
7772 -61 (E11)
7070 -67 (F6)
3269 -3 caved
4565' -4
6146 -16
3636 -3 (5-8')
5317' -4
3572 -3 (10-12')
6906 -67 (D8)
3007 -
1467 -3
6915' -67 (G8)
5485' -4
7066 -67 (F6)
6074 -16

B

3397 -3 caved
4038 -3 caved
6791 -67 (G9)
2051 -3 (5½')
6875' -67 caved
3029 -3 no data
7776 61 (E11)
1402 -1
5834 -13
7943 -61 (B13)
5773 -4
5833 -13
8088 -no data
2952 -3 (8')
5595' -4
7593 -61 (G15)
2957 -3 (F4)
6986 -67 caved)
1692 -3 (21½')
7727 -61 (B10
6744 -60 (C10)
8173 -61 (A9)
6888 -67 (I+11)
5450 -4
2050 -3 (5½')
7945' -61 (B11
6947 -67 (F8)
7273 -67 (G7)
8010 -3 (20½')

61: B10, B11, B13, A8, A9
I19, O14, B11

C

8043 -4

F

3268 -90
3245' -67

J

9059 -36

61- human worked bones in C9, 10-12'
shells in B13, 16'
soft rock at C14, 9'
artifact 15' W wall "stone wears"
9 caved in acc to (15½')
B, 6, 8 artifact

67 - 618 -11' artifact #7, 17'
H16 -15'
H12 -18'
Pit 67, C D E F #6, 7, 8, 9, 10, 11
continues deep, 12-20'
next unit base
bedrock at/all in
6-16 above F 7

occipital width

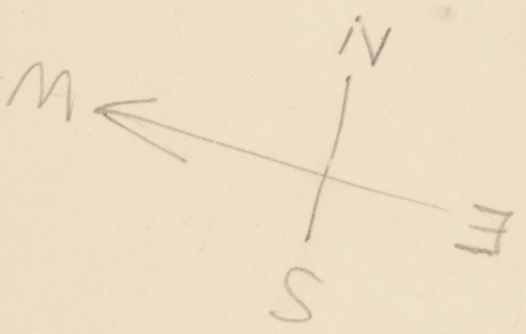
opisthotic " (across processes)

width postorbital hinge

ht mandible (vert. less in angle)

length premaxilla + symphysis

~~orbital depth~~



Columbiformes 3 + 25 + 3 = 31

Roadrunner 16

	no.		%	
~~Falcon. 2570~~				
Colymbiformes	2	——	.05	— 12
Ciconi.	53	——	1.23	— 7
Anser	173	——	4.02	— 5
✓ Falcon	2570	——	59.73	— 1
✓ Galliformes	645	——	14.99	— 2
✓ Gruiformes	33	——	.77	— 8
✓ Charad.	85	——	1.97	— 6
✓ Columb	31	——	.72	— 9
Cucul	16	——	.37	— 11
Pici	20	——	.46	— 10
Passer.	370	——	8.60	— 3
Strigiformes	305	——	7.09	— 4
	4303		100.00 %	

Colymbiformes 2

Anseriformes (omitting 28, 36, 37, 10) for Pts 1, 3, 4, 13, 14, 28, 36, 69, 61, 67, 77, 81, + acad.

Swan 1 = 2

Goose 29 + 7 + 22 + 11 + 22 + 2 + 1 + 2 + 1 + 1 = 98

Duck 31 + 4 + 4 + 2 + 31 + 1 = 73

41

173

Pt 2 1

174

Falconiformes

Pt 1	4	+ 3
" 2	23	+ 13
3	318	+ 97
4	324	+ 266
13	81	+ 99
16	396	+ 448
60	59	+ 30
61	85	+ 21
67	69	+ 10
77	55	+ 20
81	16	+ 3
acad	79	+ 31

1509 #861

1066

2570

Galliformes Parapavo Quail

Pt 1	1		
2			
3	42		7
4	173		
13	24		
16	238		84
60	13		
61	14		1
67	1		
77	10		2
acad	30		5
	546 +		99
	99		
	645		

Gruiformes

Pt 3	2
4	6
13	7
16	7
60	2
61	2
67	1
77	2
acad	4
	33

Ciconiiformes

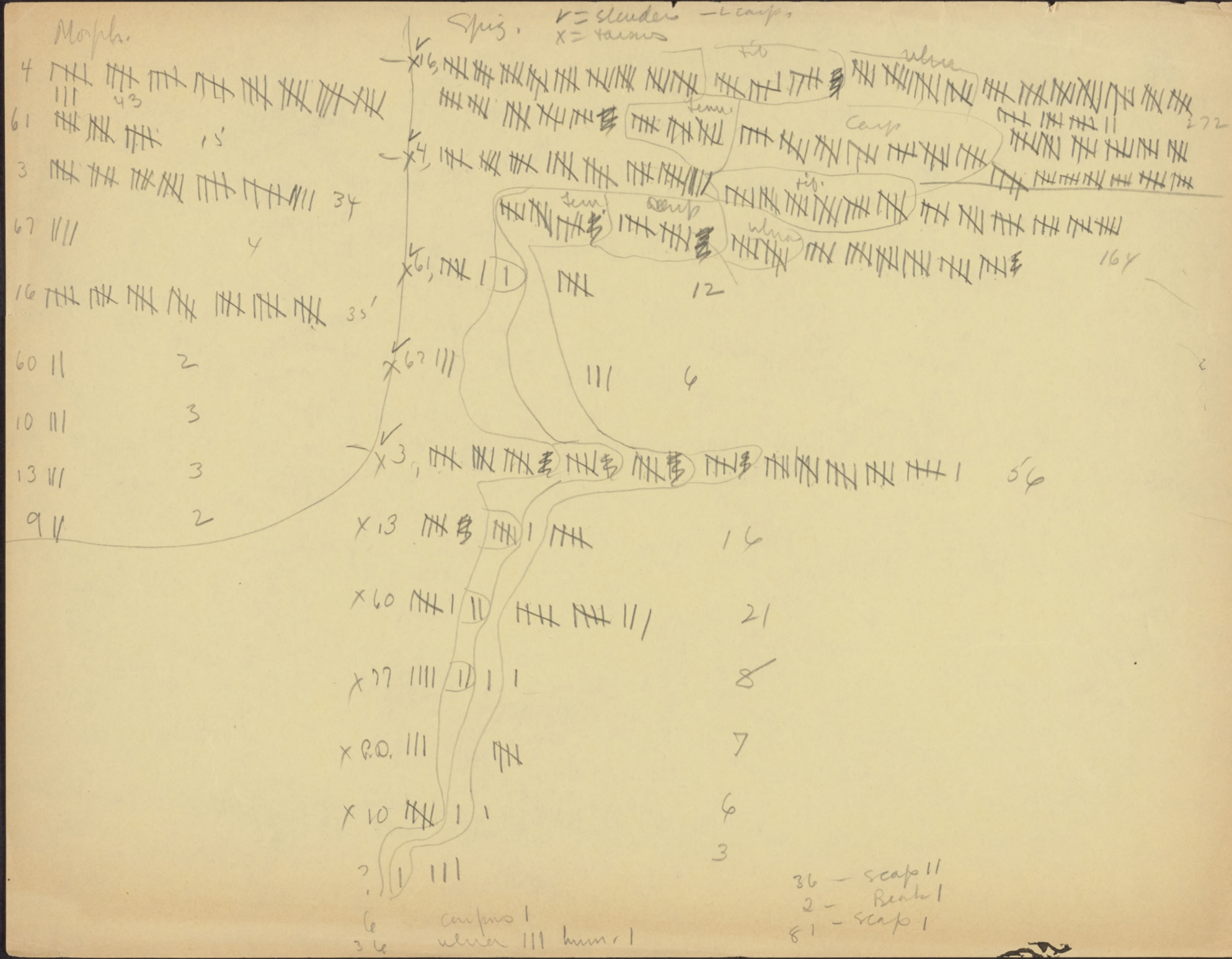
Pt 3	6
4	8
13	2
16	11
60	3
61	4
67	5
77	3
acad	11
	53

Charadriiformes

Pt 3	4
4	2
16	55
61	2
67	2
acad	20
	85

Owls

Pt 1	1
2	2
3	82
4	34
13	7
16	104
60	9
61	16
67	7
77	1
81	14
acad	24
	305


Morph.
Spic.
r = slender
x = tarsus
4
61
3
67
16
60
10
13
9
x 13
x 60
x 77
x G.O.
x 10
?
6
36
tib
ulna
tem.
carp
scap
fib.
272
164
56
16
21
8
7
6
3
36 – scap II
2 – Beak I
81 – scap I
carpus I
ulnar III hum. I

	Anas.	cya.	ulva	fitia	lenn	tayas	caryns	Total
Scoter sp?	6	9	21	17	10	8	9	81
B. can can				1	1	4	5	13
B. c. leuc?	3	1			3			4
B. minor	2				1			3
B. nig?		1						1
B. can.?	3	1						4
Chen hyp?		5			1	2	2	10
" rossi?		3				1		4
Anser alb.	1	3					2	6
n. sp.	22	29	21	18	12	16	27	135
Total Geese								284

Mallard	5	8				5	15	40
Pintail								
Gadwall	1	2	7?				4	14
Nettion	4	4		2				10
Querqued.	1	3		3				7
Teal?	12	3	10	3	1		7	41
Nyroca sp.	1	2			1		1	3
Arch sp.	57	16	6	10?	12			121
Total Ducks								236

Swan				1		1		2

Miss
anseiine

171
370
541

236
284
520

Anseriformes: Anas, cya, ulva, fitia, lenn, tayas, caryns

n. sp. humeri 22 ♂

Species of birds from the Southern California
Academy of Sciences excavation at Rancho La Brea

Ardea herodias,	13
Egretta thula or Florida caerulea,	14
Botaurus lentiginosus	4
Ciconia maltha,	23
Mycteria wetmorei	2
Mycteria americana?	1
Plegadis guarauna,	3
Cygnus columbianus	2
Branta canadensis	26
Branta nigricans?	1
Chen hyperboreus	10
Chen rossi?	3
Anser albifrons	7
Pigmy goose	135
Goose misc. sps.	111
Anas platyrhynchos	21
Mallard or Pintail	64
Chaulelasmus streperus	14
Nettion carolinense	10
Querquedula, sp.?	7
Teal, misc. sps.	43
Nyroca (2 species	6
Duck misc. sps.	89
Cathartes aura,	2
Coragyps occidentalis,	114
Gymnogyps californianus,	58
Vultur clarki	6
Teratornis merriami,	22
Neogyps errans,	21
Neophrontops americanus,	58
Accipiter cooperi	13
Buteo borealis	9
Buteo swainsoni	8
Buteo lagopus,	3
Buteo regalis	10
Circus hudsonius	19
Buteo, sps.	14

young
crane pit 60 tarsus
pit 13 tibia
pit 14 tarsus + tibia
pit 3 tarsus

Residents of the region cont'd:

(2) Predators

Coragyps occidentalis
Accipiter cooperii (only '99)
Buteo swainsoni
Geranoaetus fajilis
Neophrontops americanus
Polyborus cheriway
Falco columbarius } one each
" sparverius }
Tyto alba
Speotyto cunicularia

(3) Other land birds

Lophortyx
Parapavo
Penaidura
Geococcyx

(4) Other species which may have been residents

	Hum.	Cora.	Ulna	Scap	Tibia	Femur	Tarsus	rad.	carpus	Total
Branta can	IIII I 6	II 3			II 2	IIII 5	IIII 4		IIII 4	26
" nig.?		1								1
Chen hyperborus		5				1	2?		2	10
" rossi?		2					1			3
Anser alb.	1	4							2	7
frigmy	22	29	21		11	12	13		27	135
Goose sp?	6	11	2	13	17	11	8	15	9	111
Totals	35	55	42	13	30	29	28	15	46	293

no. of bones (non-indiv.)

	Hum.	Cora.	Ulna	Scap	Tibia	Femur	Tarsus	rad	carpus	Total
Mallard	6	7	8				6			21
" or Pintail	49								15	64
Gadwall	1	2	7						4	14
Nettion?	4	4			2					10
Querquedula	1	3			3					7
Teal, sp?	12	3	15		3	1			7	41
Nyroca lag		1			1				1	3
" vall	1	1?	1?							3
Duck sp.?	5	17	7	18	11	13		6		78
Totals										241
Mis. anser.	4	10	36	1				41	19	111
Anser Grand Total						1			1	2
										647

Ciconiidae ||| 11

C. maltha - K3154 - 3157 OK = |||1

Jabiru — K3151 OK = 1

Ardea herodias? 1

K3122 = 1

Pit 10, G4896-7 — sorted to be subtracted

Bittern ? 1 (G4901)

Pit 10 G4899-4900 — sorted to be subtracted

Hudsonian Curlew

Pit 10 G490- 114 — OK

Long billed Curlew 111 (G4903, 4907-8

Pit 10 G4905-6) — OK

Small Curlew 1 (G4904)

Dowitcher ||| (G4901-4913)

Larus 111 (G4915-17)

Pit 10 G4914

Neophron ♀ K 3107–08 = 11

Pit 10, G 2536–7

Neogyps K 3112 – 13 = 11

Teratornis

Pit 10, G 2451–2 OK

Gymnogyps

Pit 10, G 2465 OK

Coragyps

Pit 10, G 2488 OK

Cathartes

Pit 10, 2495–2506 OK

Aquila K 3120 = 1

Pit 10 G 2629 – 2690

Corvidae |||| |||| (Corvus K3099=1) |||| |||| |||| ||||

|||| |||| |||| |||| ||||

Miscellaneous

Pit 10 - G 5401-10; G 5488-5490; G 5508-9; G 6284-6376. 5409OK

F 1835 - Teratornis known see OC no. 57

K 2549 (Misc.?) K 2535 (misc.?) K 2493 (misc.?), K 2328-29 (Misc?)

K 2312 (misc.?) K 2309 (misc.)

Sturnella neglecta |||| |||| |||| |||| |||| |||| |||| |||| |||

Pit 10, G 5510, 5598 OK

Flicker |||| |||| |||| |||| |||| |

Blackbird |||| ||||

Pit 10 G 5678 OK

NO Pit 10 until Except F 1835 Terry.

Sparrow ||

Pit 10 G 5880 OK

Passerine |||| |||| ||

Pit 10, G 5686-87 OK

Quail 187

Pit 10, G 5890 OK

Parapavo 84, 292

K 3088-98 = |||| |||| |

Pit 10, G 5977-5991; OK

Geococcyx ||||| (Pt Eduardo; Questioned K 1179 pam P 36)

Olor cygnus || (G 4927–4931)

Branta |||

Pt 10, G 4935–37; G 4975–6; OK

Gavia |||| |

Pt 10, G 4943 OK

Duck |||| |||| || ||| ||||

Pigeon 1 (G 4974)

Raven |||| |||| |||| |||| |||| |||| |||| |||| |||| |||| |||| ||

Pt 10, G 4987–5039 ||| 53 Sorted. OK to be attached

Corvus b hesperis |||| |||| |||| |||| |||| |||| |||| ||||

Pt 10, G 5098–5115 (18) Sorted. OK to be attached

Aphelocoma, ||| |||| |

Pt 10, G 5155–5187 OK

Haliaeetus ||||-|||| ||||-|||| ||||-|||| ||||-|||| ||||-|||| ||||-|||| ||||-|||| |||

K 3121 = 1

Pt 10

G. grimmelli ||||-|||| ||||-|||| ||||-|||| ||||-|||| |

K 3119 = 1

Pt 10, G 2825 – 2830 let go

G. fúgulus ||||-|||| ||||-|||| ||||-|||| ||||-|||| ||

K 3117 – 18 = II

Pt 10

M. woodwardi, 11

K 3115–16 = 11

Pt 10, G 2862 let go

Falco peregrinus ||||-|

Pt 10, G 3041, 3071 JK

Polyborus 175, ||||-|||

K 3030 – 31 = 11

Pt 10, G 3090 – 3092 JK

Falco mexicanus

Pt 10, G 3076, 3083 JK

Falco sparverius

Pt 10, G 3142 – 3156

Falco columbarius

Elanus leucurus

25 left
20 ✓
Circus hudsonius

Pt 10, G 3169 – 3331 163

A. velox 1

Pt 10, G 3430 – 1

A. cooperii

Pt 10, G 3472

Buteo swainsoni

Pt 10, G 3536 – 3598

B. borealis

Pt 10 G 3649 – 3730

Wetmoregyps daggetti 11
K3114, K3159 = 11

Anatidae sp. 11
anseranella 1111
Anas 1

Flicker ~~III~~ (K1174 - 1178)

Owl sp. K1180 = 1

Heron - F1137

Archibuteo ferrugineus (IIII) ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||
||| |||

Ptr 10, G 3755 - 3839; G 3913 - 19

Bubo ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| IIII
K 3125 = 1
Ptr 10 G 3975 - 3986

Tyto 91,

||| ||| ||| ||| 3 1937

Ptr 10 G 3997 - 4189

Speotyto ||| , 195

||| ||| ||| IIII 6 196

Ptr 10, G 4286 - 4481

Otus , ||| |||

Asio ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| ||| |||

% large raptores to total raptors (minus owls)
Large = Condors, Turkey, Eagles

1	Pt 37	0
2	Pt 10	19
3	Pt 28	20
4	Pt 81	
4	Pt A	34
5	Pt 36	41
6	Pt 61-63 B D	47
7	Pt La Hi	48
8	Acad	51
9	Pt 3	58
	Pt B	
10	Pt 77	64
11	Pt 16	65
12	Pt 4	67
13	Pt 13	69
14	Pt 60	71

% hawks, falcons to total raptors (minus owls)

1	Pt 37	91%
2	Pt 28	76%
3	Pt 10	74%
4	Pt 81	58%
5	Pt 36	51%
6	Pt A	50%
7	Pt B	47%
8	La H	30%
9	Acad	20%
10	Pt 3	19
11	61-63	16%
12	Pt 2	11.9%
13	Pt 77	10%
	Pt 16	
14	Pt 4	8.5%
15	Pt 60	8.1%
16	Pt 13	6.6%

Ratio Caracara & Cathartes

1	~~Pt 37 - 0:5~~	
2	~~Pt 28 - 0:1~~	
	~~Pt 81~~	
	~~Pt A~~	
3	~~Pt 10~~	~~1:3~~
	~~Pt 36~~	
4	Pt B	2:1
5	La H	4:1
6	Pt 2	5:1
7	Acad	8:1
8	Pt 60	9:1
9	Pt 61-63	
10	Pt 16	12.5:1
11	Pt 3	13.6:1
12	Pt 77	14:1
13	Pt 4	15.2:1
14	Pt 13	18:1

% Extinct indiv. relative to total indiv not counting passerines woodpeckers or parasitic Cyanocitta counted as extinct

% owls to total indiv as described ←

% Extinct to lives Falconiformes

① Pit 37	0	① Pit 28	77%	① Pit 37	0
② Pit 28	1.5%	② Pit 10	41%	② Pit 28	4%
③ Pit 10	5.6%	③ Pit 81	37%	③ Pit 10	7%
④ Pit 81	10.0%	④ Pit 37	31	④ Pit 81	14%
⑤ Pit 36	16.0%	⑤ Pit B	30%	⑤ Pit 36	17%
⑥ Pit B (Bliss)	29%	⑥ Pit A	16%	⑥ Pit A	27%
⑦ Pit A	31%	⑦ Pit 36 } →	14%	⑦ Pit B (Bliss)	33
⑧ L.A. Hi	32%	⑧ Pit La Hi	13%	⑧ Pit 16	37
⑨ Acad } →	40%	⑨ Acad Pit }	10%	⑨ Pit 13	38
Pit 16 }		Pit 4 }	10%	⑩ Pit La Hi	41
⑩ Pit 13	41%	⑩ Pit 16	7%	⑪ Pit 60 }	46
⑪ Pit 60 }	48%	⑪ Pit 60	6.3%	Pit 4 }	
Pit 2 }		⑫ Pit 2	4.8	⑫ Pit Acad }	50
⑫ Pit 3	49%	⑬ Pit 4	3.9%	Pit 61-67 }	
⑬ Pit 4	53%	⑭ Pit 13	2.9%	⑬ Pit 3	56
⑭ Pit 61-67, PO	59%	⑮ Pit 77	1.0%	⑭ Pit 77	64
⑮ Pit 77	65%				

Pit 3: 12, 9, 10, 11, 7, 13 → 6)62, 10.5

Pit 4: 12, 13, 13, 14, 13, 12, 11 → 6)74, 12 ✓; 6)88, 12.5; 6)16 ✓, 2.6

Pit 10: 2, 3, 3, 3, 3, 2 → 6)18, 2.5; 6)16

Pit 13: 13, 15, 14, 10, 13, 9 → 6)74, 12 ✓; 6)98, 12.8; 6)60 ✓, 10

Pit 16: 14, 12, 10, 9, 10, 8 → 6)63, 10.5 ✓

Pit 28: 3, 2, 2, 2, 1, 2 → 6)12, 2 ✓

Pit 36: 5, 5, 3, 5, 7, 5.1 → 5)36, 7.2; 6)30, 5 ✓

Pit 37: 5×1, 4, 6)9, 1.5 ✓; 9, 1, 7)10, 1.4

Pit B: 9, 7, 4, 6, 5, 7 → 6)38, 6.3 ✓; 7)43, 6.1; 7)10, 1.4

Pit 60: 14, 14, 8, 11, 11, 11 → 6)69, 11.5 ✓; 7)82, 11.7

Pit 61-67, PO: 6, 11, 9, 14, 9, 12 → 7)72, 10.2; 6)61, 10 ✓

Pit 77: 10, 12, 12, 15, 14, 14 → 6)77, 12.8 ✓; 7)92, 13.1

Pit 81: 3, 4, 2, 4, 3, 4 → 6)20, 3.3 ✓; 7)24, 3.4

Acad: 8, 9, 7, 9, 9, 12 → 6)54, 9 ✓; 6)63, 9

La Hi: 7, 8, 5, 8, 8, 10 → 6)46, 7.6 ✓; 7)54, 7.7

Pit A: 4, 6, 2, 7, 6, 6 → 7)31, 7; 7)38, 5.4 ✓; 7)49, 7

Order

1.4 – Pit 37
2.0 Pit 28
2.5+ Pit 10
3.4 Pit 81
5.1 Pit 36
5.4 Pit A
6.1 Pit B
7.0 La Hi
9.0 Acad
10.2 – Pit 3, Pit 16, Pit 61-67
11.7 Pit 60
12.5 – Pit 4
12.8 – Pit 13
13.1 Pit 77

Ratio Corappo's (R=Record?)
Catmarkers

Pt 3 13.6:1
41:3 = ~~1367~~ X

Pt 4 15.2:1
61:4 = ~~1524~~ X

R Pt 10 1:3 ✓
3:10 = 30% X

Pt 13 18:1 X
18:1 = ~~1800~~

Pt 16 12.5:1
25:2 = 125 X

R? Pt 28
0:1 = 0 ✓

R? Pt 36 1:3 ✓
1:3 = 33% X

R Pt 37 ✓
~~0:5 = 0~~ X

Pt B 2:1
2:1 = 200% X

Pt 60 9:1
9:1 = ~~900~~ X

61-67-PO
18:2 = 900% X

Pt 77
14:1 14:1 X

R Pt A1 ✓
0:1 X

Acad 8:1 X

La Hi Pt 4:1 X

R? ~~Pt A 0:1~~ X

Pt 2 = 5:1 X

90 Hawks, owls, falcons & Vaseal Pt

Pt 3
32.7
497) 163.0
1491
1390
994
3960
3976

Pt 4
13.5
628) 8510
628
2220
1884
3360

Pt 10
85.8
623) 5339
498
3660
3115
5450

Pt 13
10
188) 1910
188
20 ✓

Pt 16
17.8
961) 19110
961
9490
8649
841

Pt 28
.95
127) 121.0
1143
670
635
350

Pt 36
65.8
79) 520
474
460
395
650

Pt 37
96.8
157) 1520
1413
1070
942
1280
54

Pt B
61.3
101) 670
606
640
606
340

Pt 60
.15
120) 18.0
120
600
600

Pt 61-67
22.6
305) 690
610
800
610
1900

Pt 77
11.3
79) 910
79
110
79
310

Pt 81
73.6
38) 2800
266
140
114
260

Acad
36.2
138) 5010
414
860
828
320

La Hi Pt
.57
127) 65.0
635
150
127
230

Pt A
60
136) 820
816
400
408

Large rapture to Total (mus. rats)

Pt 3 .58 414) 243.0 2079 3600 ✓

Pt B? .58 65) 25.0 195 550 520 ✓

Pt 3 .19 414) 800 414 3860 3726 ✓

Hawks, falcons & total rapt. mus. owls

Pt B .47 65) 31.0 260 500 ✓

Pt 4 .67 594) 398.0 3564 4160 4158 ✓

Pt 60 .71 111) 79.0 77 7 120 ✓

Pt 4 .0845 594) 5100 4752 3480 3 64 ✓

Pt 60 .081 111) 9.00 888 120 ✓

Pt 10 .19 349) 68.0 349 3310 ✓

61-62, Pt D .47 281) 132.0 1124 1960 1967 ✓

Pt 10 .74 349) 2610 2443 1670 ✓

61-62, Pt D .16 281) 45.0 280 1700 1686 ✓

Pt 13 .69 181) 125.0 1086 1640 1629 ✓

Pt 77 .64 78) 50.0 468 320 312 ✓

Pt 13 .0664 181) 12.00 1086 1140 ✓

Pt 77 .10 78) 8.0 78 20 ✓

Pt 16 .65 854) 563.0 5124 4940 4280 ✓

Pt 41 .20 24) 5.0 48 20 ✓

Pt 16 ✓ 10% 856) 86.0 856 40

Pt 41 .58 24) 140 120 200 192 ✓

Pt 28 .20 25) 50 ✓

Acad 51 110) 57.0 550 200 ✓

Pt 28 ✓ .76 25) 19.0 175 150

Acad Pt 20 110) 22.0 220 ✓

Pt 36 .41 56) 23.0 224 60 ✓

Lat 48 86) 420 344 760 688 72 ✓

Pt 36 .51 56) 290 280 100 ✓

Lat Pt .30 86) 26.0 258 20 ✓

Pt 37 ✓ 0

Pt A .34 108) 37.0 324 460 432 ✓

Pt 37 ✓ .91 107) 1020 963 170 ✓

Pt A .50 108) 54.0 540 ✓

Extract to living rapture

excluding ovals

Pt 3

liv, 180
ext, 234
414

414) 234.0 = 56
2070
2700

Pt 4

liv 319
ext, 275
594

594) 2750 = 46
2376
3740
3564
1760

Pt 10

liv 322
ext, 27
349

349) 27,00 = ,077
2443
2570
2443
1270

Pt 13

liv 111
ext, 70
181

181) 200 = ,38
543
1570
1448
1220

Pt 14

liv 532
ext 324
856

856) 3270 = 37
2568
6720
5992
728

Pt 28

24
25

25) 1000 = ,04 %

Pt 34

46
10
56

56) 60.0 = ,17
56
440

Pt 37

107 0 %

Bliss (B?)

43
22
65

65) 220 = 33
195
250

Pt 60

59
52
111

111) 520 = 46
444
760

Pt 61-67, P.D

liv, 138
ext 143
281

281) 143.0 = 50
1405
250

59 64
44 16
8 41
27 143
8

Pt 77

liv 28
ext 50
78

78) 50.0 = 64
468
320
312

Acad

liv 54
ext 56
110

110) 560 = 50
550
10

Lake

liv 50
ext 36
86

86) 360 = 41
344
160

Pt A

liv 78
30
108

108) 30.0 = ,27
216
840
756
840

Pt 81

liv 18
ext 3
24

24) 30 = 14
24
60

Gymnosperms with ext.

Pt 36
Lion indiv. 125
ext. 124
149

149 | 240 → 16 90
149
910
894
16

Pt 60
lion 73
ext 68
141

141 | 680 → 48
564
1160
1128
32

Pt 28
132 | 200 → 1 90
132
680

Pt 61
lion 70
ext 81
151

151 | 810 → 53 90
755
550

Pt 67
lion 41
ext 64
105

105 | 640 → 60 90
630
10

P.D.
lion 11
ext 31
42

42 | 310 → 73
294
16

61-67 + P.D.
lion 122
ext 176
298

298 | 1760 → 59
1490
270

Blion 29 (= Pt B?)
84
34
118

118 | 340 → 2 90
236
104
102
extinct indiv.

Pt 81
36
4
40

40 | 40 → 1 90

Pt 77
33
62
95

95 | 620 → 45 90
570
500

Pt 8. with lion

128
21
149

149 | 210 → 1 90
149
610
447
163

80
61
141

141 | 610 → 43 90
564
460
423
370

92
59
151

151 | 590 → 39 90
453
137
135

59
46
105

105 | 460 → 43 90
420
400

61-67, P.D.

13
29
42

42 | 290 → 7
232
380
378

164
134
298

298 | 1340 → 45
1192
148
1490
14

Pct 10

livres 622
extract 37
659

659) 3700 .056
3295
4050
3944

659) 3600 .054
3295
3050
2636
414

Pct 3

livres 290
extract 280
570

570) 2800 .49 extract
2280
5200
5130
70

livres 379
extract 191
570

570) 1910 33%
1710
2000

Pct 4

livres 397
extract 460
857

857) 4600 .53 extract
4285
3150
2571
5790

livres 430
extract 427

Pct 16

livres 863
ext. 581
1444

1444) 5810 .40%
5776
0340

867
577
1444

1444) 5770 40%

Acad. Pct

livres 160
ext. 107
267

267) 1078 40
1068
10

liv 166
ext 101
267

267) 1010 .34%
801
1090

Pct 13

livres 138
99
237

237) 9900 .41
948
420

149
88
237

237) 8890 .37%
711
1690

Pct A

213) 4600 .31%
639
210

148
65
213

213) 6450 .30%
639
110

863) 10.00 .11
863
1370

397) 3200 .83
3176
240

290) 810 .29
580
2300

570) 810 .14 Pt 3
570
2400
2280
290
280
570

581
863
1444
1444) 10500 .07 90 owls Pt 16
147 4

99
138
237
237) 7.00 .02 9 90 owls Pt 13
474
2260

397
460
857
857) 37.00 .039 owls Pt 4
2571
8290
7713
677

68
73
141
141) 9.00 .06 38 90 owls Pt 60
846
540

81
70
151
151) 15.0 .10 owls Pt 61

622
37
659
659) 2740 .41 90 owls Pt 10
2636
1040

64
41
105
105) 7.00 .07 90 owls Pt 67

62
33
95
95) 1.00 .01 90 owls Pt 77

lw 36
ext 4
40
40) 130 3.2 90 owls Pt 81
120
100

107
160
267
267) 270 .10 90 owls
267
3 Quad.

ext 24
lw 125
149
149) 220 1.47 90 owls Pt 36
149
710
596
1140

298) 310 1.0 90
298
120
119
58
177
177) 240 13
177
630
Pts 61-67 FPD

130
2
132
132) 102.0 .77 90 owls Pt 28
924
960
576

1600) 50.0 .31 owls Pt 37
4800
200

147
46
213
213) 390 18 owls Pt A
213
1779
1704

84
34
118
118) 360 30 90 owls Pt B
354
60

32

VK Dec. 15, 1937

regalis

	37	51	40	2	47	3	77	60	61	36	28	13	16	81
right ♀	4	1	2	1	2	3								
♂	7	1	1	1	5		1	2	1	1	1	1	1	1
left ♀	4			1	2	1								
♂	12	1	2	1	5		1	2	1	2				

borealis

Dec. 15, 1937

	51	16	28	9	37	81	3	61	67	60	2	77	P.Q.	4	13
right ♀ 37	1	6	2	1	4	5	1	1				1	1	5	3
left ♀ 36	1	5				2	2	1				3	2	2	2

Pt 16 ✓

Ciconia 10
nat max comp dist
nat ||||| || | ||||| |||
left |||| | ||||

Florida
1

Ardea
1

Pt 17 ✓

Ciconia 2
nat max comp dist
|| | ||

Ajaia
1

Pt 4 ✓

Ciconia 8
nat max comp dist
|||| || ||
||| || ||||

Pt 3 ✓

Ciconia 2
nat max comp dist
|| | |
|

Bittern
1

Ardea
|||

Pt 60 ✓

Ciconia 2
left dist ||
nat dist |

Ardea?
1

Pt 13 ✓

Ciconia 2
nat dist |
left max |
comp |

P.D. ✓

Ciconia 2
left dist ||
left max |

Ardea
nat |

67 ✓

Ajaia
left max |

Plegadis
|

Nycticorax
|

Ardea
left |

Casmerodius |

61 ✓

Florida
|

Ardea
|

Butorides
|

Pt 81 ✓

Bittern |

Pt 36? ✓

Bittern
|

Pt 10

Ardea |
Plegadis |
Mycteria |

Pt 28 ✓

Casmerodius |

(67)

Axis

	28	81	3	16	36	13	4	37	61	69	9	60	51
Left	8	7	9	12	6	1	4	4	2	2	1	1	
prox		2					1						
dist	2	1		2									
Right	12 (21)	2	9	8	3			4	1			1	
prox				1									
dist			1	1									

70
59
129

29
47
43
41
160

	10	4	16	Acad.	McK2	
B. sp.	0	2	4	0		
Astur	0	0	1	0		wooded habitat
Accipiter	0	0	5	1		
Buteo/Buteo jamaicensis	0	0	0	0		
Haliaeetus leucocephalus	0	0	0	0		
Falco sparverius	0	0	0	0		
Columba	0	1				
Zenaida macroura	1	1	2	0		
Meleagris gallopavo	1	13	12	3		
	2	17	24	4	26	
Spizella	104	3	10	3		many
Calamospiza	8	5	0	1	21	
Cardinalis	1	8	10	3	107	plains habitat
Pipilo	99	3	2	8	65	
Melospiza	9	2	5	2	15	
Passerella	13	0	3	2	5	
Passerculus	3	22	22	29	86	
Junco	5	6	5	4		
Calcarius	84	8	4	3		
Plectrophenax nivalis	45	3	2	2	8	
	371	40	64	57		
	203	46	17	11		
	28.2% 168	546.3	493.5	46 16.7		
Sphyrapicus	1	7	84	5	93	brush habitat
Pheucticus	8	173	238	30	many	
Geothlypis	0	4	9	2		
	9	184	331	37		
	1.5%	21.6%	23.6	13.5%		

Comparisons RhB + other locs.
(McK, Carpinteria, Conkling Cavern, Shelter Cave)

48+122.00

	Carp. 1	Carp. 2
small raptors		28
owl	1	
Darter & falcon	26	34
	27	62
med. raptors	76	79
lg raptores		
extinct eagles	15	23
living eagles	1	12
Terry	6	3
living corridor	4	5
	24	43
Total raptores	129	180
Total extinct rapt	26	34
ext. rapt & total rapt	20% R	18.9% R
small & total	20.9% P	33.3 R
lge & total	20.0 R	23.9 R
med + lg & total	79 P	46.7 R
Total extinct	172	149
Total indiv	321	331
rabies %	53.6%	45%

481
160
221

143

Owls 2

extinct
raptors 8 or 9 } 66% – 70% extinct
others 7

large raptors 28
med " 94/12 — 65%
small " 6 — 35%
+ 2/8

8
38/
126

19

Carb. Carl 50 total

owls 2

extinct raptors 19 (+4?) = 23? } 22 or 26 = 44% or 50%
other ext. 3
large " } 37 = 85%
med " 27
small " 4 = 14.6%
47

extinct raptor & total = 38 or 46%

Sm. Creek Cave

Shelter Cave

516 total

owls except Bubo	7	
Bubo	2	
extinct raptors	2?	3.5%
" other spp	4/6	10.7%
large raptors	6	≈ 20%
med	7 + 2 = 9	15 = 50%
small	8 + 7 = 15	= 50%
total raptors	21 + 9 = 30	

like 36 of 81

60 + 77

Vultur clarki

1 and 2

3 " 4

13 " 14

61 " 67

77 " dead